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October, 1933

RESERVE

COMMERCIAL FERTILIZERS

REPORT FOR 1933



Connecticut
Agricultural Experiment Station
New Haven



Bulletin 355

October, 1933

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COMMERCIAL FERTILIZERS

REPORT FOR 1933

E. M. BAILEY

*Chemist in Charge
Department of Analytical Chemistry*

Connecticut
Agricultural Experiment Station
New Haven

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COMMERCIAL FERTILIZERS REPORT FOR 1933

STATUTE AND REGULATIONS REGARDING COMMERCIAL FERTILIZERS

The term "commercial fertilizers" as used in the Connecticut fertilizer statute includes any and every substance imported, manufactured, prepared or sold for fertilizing or manuring or soil amendment purposes, except barnyard manure and stable manure that have not been artificially treated or manipulated, marl, and lime.

The seller is responsible for the proper labelling of each package of fertilizer, for the registration of each brand sold or offered for sale, for the payment of the required analysis fee and for the payment of the tonnage tax. If, however, proper labelling, registration and payments of analysis fees and of tonnage tax have been provided for by the manufacturer or by another responsible person, all sellers of such brands are released from the above mentioned requirements. The retailer, therefore, should assure himself that the requirements of the law have been met by the manufacturer of the brands which he handles, or himself be prepared to meet all these requirements.

It frequently happens that a manufacturer or jobber sells fertilizer materials which are the products of, and which are registered by, another firm or individual. Distributors in such cases should sell such materials by the exact brand names under which they are registered in order that there may be no mistake as to the identity of the brands. Any change in the brand names, or failure to make the identity of the brand and its manufacturer clear makes the distributor liable for the registration of the product as his own brand.

The law exempts from registration, and from other requirements referred to, only (1) fertilizers passing through the state in transit; (2) fertilizers and fertilizer materials shipped to regular fertilizer factories to be used for manufacturing purposes; and (3) fertilizers and fertilizer chemicals sold to the Connecticut Agricultural Experiment Station for experimental purposes.

NOTE: Analyses reported in this bulletin were made by Messrs. Nolan, Mathis and Walden; microscopic examinations by Miss Shepard; inspection and sampling by Mr. Churchill; and compilations by Mrs. Vosburgh.

RECENT CHANGES AFFECTING FERTILIZER CONTROL

LABELLING

Mixed fertilizer offered for sale in this State during the year 1933 were held to the requirements of a regulation issued by this Station June 25, 1931. The regulation is as follows:

"In view of the resolution passed by the Fertilizer Control Officials of the thirteen Northeastern States favoring (1) the statement of 'grade' as a part of the brand name of mixed fertilizers, e.g., XX Potato Manure 4-8-4; (2) that the significance of 'grade' shall be nitrogen, available phosphoric acid, and water-soluble potash, and in that order, e.g., XX Potato Manure 4-8-4 meaning 4% nitrogen (not 4% ammonia), 8% available phosphoric acid and 4% water-soluble potash; (3) that statements of grade and of guaranteed analysis shall be in whole numbers; and (4) that statements of guaranties shall include only minimum percentages of nitrogen, available phosphoric acid and water-soluble potash; and inasmuch as these recommendations are in accord with rules adopted by the Association of Official Agricultural Chemists, which rules are required by Sec. 5 of the Connecticut fertilizer law to be followed in administering the act; this Station will, on and after January 1, 1932, observe the foregoing procedure and urge its adoption by all concerned with the manufacture, sale and distribution of fertilizers and by those charged with the dissemination of information concerning fertilizers and fertilizer problems.

"In accordance with this understanding and acceptance of terms and procedure this Station will expect (1) that mixed fertilizer offered for registration for the year 1932 and thereafter will carry as a part of the brand name, whenever possible, the grade of the mixture; (2) that the statement of the grade will be in whole numbers; (3) that the significance of the numerals expressing the grade, and the order of them, will be nitrogen (not ammonia), available phosphoric acid and water-soluble potash; (4) that the statement of guaranteed analysis will give the percentages, in whole numbers only, of nitrogen, available phosphoric acid and water-soluble potash, and in that order; and (5), that tags or stencils upon bags will agree with the registration.

"In the case of mixtures in which phosphoric acid is derived from sources (e.g., bone and tankage), in which available phosphoric acid cannot be adequately evaluated by present analytical methods, total phosphoric acid may be stated in the guaranteed analysis, and the statement of grade may be omitted. In the statement of grade, total phosphoric acid may not be substituted for available."

While this regulation applies to *mixed* fertilizers only, it is recommended that guaranties for raw materials follow the spirit of the ruling so far as may be. Nitrogenous raw materials, for example, should be guaranteed in terms of nitrogen, but not necessarily in whole numbers; bone and tankage should show guaranties expressed in terms of nitrogen and total phosphoric acid rather than ammonia and bone phosphate of lime as formerly.

In the case of mixed fertilizers in which the phosphoric acid is derived from materials such as bone, in which present analytical methods do not adequately evaluate available phosphoric acid, it was regarded as advisable to omit the statement of grade and allow total phosphoric to be given in the guaranteed analysis, preferably instead of available, but if desired, in addition to it. In any case the qualifying phrase, "All the phosphoric acid is derived from bone," is permitted.

METHODS OF ANALYSIS

Phosphoric acid insoluble in ammonium citrate solution has been determined this year according to the revised methods adopted by the Association of Official Agricultural Chemists at the annual meeting October, 1931, whereby a 1-gram charge of fertilizer is used instead of 2 grams and the time of digestion in ammonium citrate solution increased from 30 minutes to 1 hour.

DEFINITIONS OF FERTILIZER MATERIALS AND
INTERPRETATION OF TERMS USED IN
FERTILIZER CONTROL

For the purpose of bringing about a better understanding among control officials and the fertilizer industry as to the identity of fertilizer materials and the significance of terms used in interpreting results of analysis, a special committee of the Association of Official Agricultural Chemists was appointed in 1921 to consider this question and from time to time pronouncements have been made.

The following definitions and interpretations are now official.

DEFINITIONS

ACIDULATED FISH TANKAGE, ACIDULATED FISH SCRAP

Acidulated fish tankage, acidulated fish scrap, is the rendered product derived from fish and treated with sulfuric acid.

ACTIVATED SEWAGE PRODUCTS

Activated sewage products are those made from sewage freed from grit and coarse solids and aerated after being inoculated with micro-organisms. The resulting flocculated organic matter is withdrawn from the tanks, filtrated with or without the aid of coagulants, dried, ground, and screened.

AMMONIATED SUPERPHOSPHATE

Ammoniated superphosphate is a product containing superphosphate and/or dissolved bone and nitrogenous compounds, but without the addition of potash.

ANALYSIS

Analysis, as applied to fertilizers, designates the percentage composition of the product expressed in terms of nitrogen, phosphoric acid, and potash in their various forms.

ASHES FROM LEACHED WOOD

Ashes from leached wood are unleached ashes resulting from the burning of wood that has been exposed to or digested in water or other liquid solvent, as in the extraction of dyes, so that a part of the plant food has been dissolved and removed.

BASIC PHOSPHATE SLAG

Basic phosphate slag is a by-product in the manufacture of steel from phosphatic iron ores. The product shall be finely ground and shall contain no admixture of

materials other than what results in the original process of manufacture. It shall contain not less than twelve per cent (12%) of total phosphoric acid (P_2O_5), not less than eighty per cent (80%) of which shall be soluble in two per cent (2%) citric acid solution according to the Wagner method of analysis. Any other phosphate slag not conforming to this definition shall be designated low grade.

BRAND AND BRAND NAME

A brand is a term, design, or trademark used in connection with one or several grades of fertilizers.

A brand name is a specific designation applied to an individual fertilizer.

CRUDE, INERT, OR SLOW-ACTING NITROGENOUS MATERIALS

Crude, inert, or slow-acting nitrogenous materials are unprocessed organic substances relatively high in nitrogen, but having a very low value as plant food and showing a low activity by both the alkaline and neutral permanganate methods (below fifty per cent (50%) and eighty per cent (80%) respectively.)

DISSOLVED BONE

Dissolved bone is ground bone or bone meal that has been treated with sulfuric acid.

DRIED BLOOD

Dried blood is the collected blood of slaughtered animals, dried and ground, and containing not less than twelve per cent (12%) of nitrogen in organic forms.

DRIED, PULVERIZED, OR SHREDDED MANURES

Dried, pulverized, or shredded manures are what the name indicates, and not mixtures of manures and other materials.

FERTILIZER GRADE

Fertilizer grade shall represent only the minimum guarantee of its plant food expressed in terms of nitrogen (not ammonia), available phosphoric acid, and water-soluble potash.

FISH TANKAGE, FISH SCRAP, DRY GROUND FISH, FISH MEAL FERTILIZER GRADE

Fish tankage, fish scrap, dry ground fish, fish meal fertilizer grade is the dried ground product derived from rendered or unrendered fish.

GARBAGE TANKAGE

Garbage tankage is the rendered, dried, and ground product derived from waste household food materials.

GROUND RAW BONE

Ground raw bone is dried ground animal bones that have not been previously steamed under pressure.

GROUND STEAMED BONE

Ground steamed bone is ground animal bones that have been previously steamed under pressure.

HOOF AND HORN MEAL

Hoof and horn meal is processed, dried, and ground hoofs and horns.

KAINIT

Kainit is a potash salt containing potassium and sodium chlorides and sometimes sulfate of magnesia with not less than twelve per cent (12%) of potash (K_2O).

LEACHED WOOD ASHES

Leached wood ashes are ashes from burned unleached wood with part of their plant food removed by artificial means or by exposure to rains, snows, or other solvent.

MANURE SALTS

Manure salts are potash salts containing high percentages of chloride and from twenty per cent (20%) to thirty per cent (30%) of potash (K_2O). The term double manure salts is discontinued.

MURIATE OF POTASH (COMMERCIAL POTASSIUM CHLORIDE)

Muriate of potash is a potash salt containing not less than forty-eight per cent (48%) of potash (K_2O), chiefly as chloride.

NITRATE OF POTASH (COMMERCIAL POTASSIUM NITRATE)

Nitrate of potash is a salt containing not less than twelve per cent (12%) of nitrogen and forty-four per cent (44%) of potash (K_2O).

NITRATE OF SODA (COMMERCIAL SODIUM NITRATE)

Nitrate of soda is commercial sodium nitrate containing not less than fifteen per cent (15%) of nitrogen, chiefly as sodium nitrate.

PRODUCTS SECURED BY HEATING CALCIUM PHOSPHATE WITH ALKALI SALTS
CONTAINING POTASH

Products secured by heating calcium phosphate with alkali salts containing potash are non-acid phosphates with potash. They are not potassium phosphate.

SULFATE OF POTASH (COMMERCIAL POTASSIUM SULFATE)

Sulfate of potash is a potash salt containing not less than forty-eight per cent (48%) of potash (K_2O), chiefly as sulfate, and not more than two and one-half per cent (2.5%) of chlorine.

SULPHATE OF POTASH-MAGNESIA

Sulfate of potash-magnesia is a potash salt containing not less than twenty-five per cent (25%) of potash (K_2O), nor less than twenty-five per cent (25%) of sulfate of magnesia, and not more than two and one-half (2.5%) of chlorine.

SUPERPHOSPHATE

Superphosphate is a cured mixture of rock phosphate and sulfuric acid and/or phosphoric acid. The grade shall always be used as a prefix to the name. Example: 16% Superphosphate. The use of the term Acid Phosphate is discontinued.

TANKAGE

Tankage (without qualification) is the rendered, dried, and ground by-product, largely meat and bone from animals (slaughtered or that have died otherwise).

UNIT OF PLANT FOOD

A unit of plant food is twenty (20) pounds, or one per cent (1%) of a ton.

UNLEACHED WOOD ASHES

Unleached wood ashes are ashes from burned unleached wood that have had no part of their plant food removed and that contain four per cent (4%) or more of water-soluble potash (K_2O).

INTERPRETATIONS

ACTIVITY OF WATER-INSOLUBLE NITROGEN IN FERTILIZERS

The alkaline and neutral permanganate methods distinguish between the better and the poorer sources of water-insoluble nitrogen; they do not show the percentage availability of the material. The available nitrogen of any product is measured only by carefully conducted vegetation experiments.

(a) The methods shall be used on mixed fertilizers containing water-insoluble nitrogen amounting to three-tenths of one per cent (0.3%) or more of the weight of the material. If a total nitrogen exceeds the minimum guarantee and is accompanied by a low activity of the insoluble nitrogen, the over-run shall be taken into consideration in determining the classification of the water-insoluble nitrogen.

(b) The water-insoluble nitrogen in mixed fertilizers showing an activity below fifty per cent (50%) by the alkaline method and also below eighty per cent (80%) by the neutral method shall be classed as inferior. This necessitates the use of both methods, also the provision as to over-run in (a), before classifying as inferior.

AMOUNT OF CHLORINE PERMISSIBLE IN FERTILIZERS IN WHICH THE POTASH IS CLAIMED AS SULPHATE

Chlorine in mixed fertilizers in which the potash is claimed as sulfate shall not exceed one-half of one per cent (0.5%) more than what is called for in the minimum potash content based on the definition for sulfate of potash formulated by the committee. Calculate as follows: 0.05 times the percentage of potash found plus 0.5.

BRAND NAME TO INCLUDE ANALYSIS OR GRADE OF FERTILIZER

The analysis or grade of a fertilizer should be included with its brand name, and so used by the manufacturer on sacks and in printed literature and by the control official in his reports and publications.

FERTILIZER FORMULA

A fertilizer formula shall express the quantity and grade of the crude stock materials used in making a fertilizer mixture. For example: 800 pounds of 16 per cent superphosphate, 800 pounds of tankage (7.40 nitrogen and 9.15 total phosphoric acid), and 400 pounds of sulphate of potash-magnesia (twenty-six per cent (26%), potash).

FINELY GROUND AS APPLIED TO BASIC PHOSPHATE SLAG

Finely ground in the definition of basic phosphate slag shall refer to actual size of particles as determined by the use of standard sieves, as follows: seventy per cent (70%) or more shall pass a 100-, and ninety per cent (90%) or more shall pass a 50-mesh sieve.

FORM OF NITROGEN IN CALCIUM CYANAMIDE

The nitrogen in calcium cyanamide shall be considered as being of organic nature.

THE TERM LIME AS APPLIED TO FERTILIZERS

The term lime shall not be used in the registration, labelling, or guaranteeing of fertilizers or fertilizing materials, unless the lime is in a form to neutralize soil acidity, such as the oxide, hydroxide, or carbonate, or equivalent magnesia compounds.

ORDER OF TERMS

The order of terms in mixed fertilizers shall be nitrogen first, phosphoric acid second, and potash third.

NAME OF A FERTILIZER MATERIAL USED AS THE BRAND NAME OR PART OF THE
BRAND NAME OF A MIXED FERTILIZER

When the name of a fertilizer material is used as part of the brand name of a mixed fertilizer, as for example blood, bone or fish, the nitrogen or phosphoric acid shall be derived from or supplied entirely by the material named. When the name of a fertilizer material is used as a brand or as part of a brand and the nitrogen and phosphoric acid is not supplied by the material named, the word brand shall follow the name of the material. Example: Fish Brand Fertilizer.

STATEMENT OF GUARANTEE

The statement of guarantee of mixed fertilizers shall be given in whole numbers.

REGISTRATIONS

LATE REGISTRATIONS FOR 1932

To the brands registered for 1932 in our last report should be added:

Cairo Meal and Cake Co., Cairo, Ill.
 "Miss Cairo" Brand 41% Cottonseed Meal
Summers Fertilizer Co., Inc., Baltimore, Md.
 Summers's "Best on Earth" 16-20 Superphosphate

REGISTRATIONS FOR 1933

For 1933, 64 firms and individuals registered at this Station for sale in this State 334 brands of fertilizers. As required by statute the brands so registered are listed as follows.

American Agricultural Chemical Co.,
 New Haven Sales Dept., Drawer
 H, West Haven, Conn.

AA Aroostook Potato Manure 5-8-7
 AA Corn Favorite 3-10-4
 AA General Crop Fertilizer 2-10-2
 AA Hi-Grade Tobacco Manure 6-3-6
 AA Monarch Fertilizer 4-8-4
 AA Peerless Fertilizer 4-8-7
 AA Prolific 10% Potash Fertilizer
 2-8-10
 AA Superphosphate 16%
 AA Tobacco Starter 5-5-15
 AA Top Dresser 7-6-6
 Agrico for Aroostock 5-8-7
 Agrico for Corn 3-10-6
 Agrico for Lawns, Trees and Shrubs
 7-6-6
 Agrico for New England 4-8-10
 Agrico for Tobacco 6-3-6
 Agrico for Truck 4-10-5
 Bowker's Market Garden Fertilizer
 4-8-4
 Bowker's Stockbridge Early Crop
 Manure 5-8-7
 Bradley's Blood, Bone and Potash
 Brand 5-8-7
 Bradley's XL Fertilizer 3-10-4
 Castor Pomace
 Double A Tobacco Fertilizer 5-3-5
 Dry Ground Fish
 Fine Ground Bone
 Muriate of Potash
 Pulverized Sheep & Goat Manure
 Sanderson's Formula B 4-8-7 (Potash
 Derived from Sulphate)
 Sulphate of Ammonia

**American Cyanamid Co., 535 Fifth
 Ave., New York City**

Aero Cyanamid
 Ammo-Phos 11-48-0
 Ammo-Phos 16-20-0

**Apothecaries Hall Co., Waterbury,
 Conn.**

Bone Meal 2.47%
 Bone Meal 3.29%
 Bone & Meat Tankage
 Carbonate of Potash
 Castor Pomace
 Cotton Hull Ashes
 Dry Ground Fish
 Liberty Corn, 2-10-2
 Liberty Fish, Bone & Potash, 3-10-4
 Liberty High Grade Corn, 2-12-4
 Liberty High Grade Market Gardeners,
 5-8-7
 Liberty High Grade Tobacco Manure,
 6-3-7
 Liberty Market Gardeners Special,
 4-8-4
 Liberty Onion Special (Potash as Sul-
 phate) 4-8-7
 Liberty Potato & General Crops, 4-8-10
 Liberty Potato & Market Gardeners
 (Potash as Muriate), 4-8-7
 Liberty Special Fertilizer for Fruit,
 7-8-6
 Liberty Special Fertilizer for Lawns,
 Gardens, Flowers, Shrubs, Trees,
 4-4-0
 Liberty Tobacco Special, 5-3-5
 Liberty Tobacco Starter, 4-10-0
 Liberty Tobacco Starter with Potash,
 5-4-15
 Liberty Top Dresser for Grass & Grain,
 8-8-8
 Linseed Meal
 Nitrate of Potash, 13-44
 Nitrate of Soda
 Precipitated Bone
 Sheep Manure
 Sulphate of Potash & Magnesia
 Superphosphate 16%
 Superphosphate 18%
 Tankage

Armour Fertilizer Works, 10 E. 40th St., New York City

Armour's Big Crop Fertilizers 4-8-4
 Armour's Big Crop Fertilizers 5-8-7
 Armour's Big Crop Fertilizers 6-11-10
 Armour's Big Crop Fertilizers 7-6-6
 Armour's Big Crop Fertilizers — 16% Superphosphate
 Armour's Big Crop Fertilizers Tobacco Special 5-3-5
 Armour's Bone Meal
 Armour's Ground Tankage
 Armour's Lawn & Garden Grower 5-8-6
 Armour's Raw Bone Meal
 Castor Pomace
 Sheep & Goat Manure

Ashcraft-Wilkinson Co., Atlanta, Ga.
 Helmet Brand Cottonseed Meal

Associated Seed Growers, Inc., 205 Church St., New Haven, Conn.

Acid Phosphate
 Clark's Special Mixture for General Use, 3-8-4
 Clark's Special Mixture 6% Potash, 3-8-6
 Clark's Tip Top Brand, 4-8-7
 Nitrate of Soda, Champion Brand

The Baker Castor Oil Co., 120 Broadway, New York City
 Castor Pomace

Barrett Co., 40 Rector St., New York City

Arcadian Nitrate of Soda
 Arcadian Sulphate of Ammonia
 Sulphate of Ammonia

F. A. Bartlett Tree Expert Co., Inc., 60 Canal St., Stamford, Conn.

Bartlett Green Tree Food, 6-7-4

Berkshire Chemical Co., Bridgeport, Conn.

Berkshire 5-8-7 Fertilizer
 Berkshire Castor Pomace
 Berkshire Complete Fertilizer, 2-12-2
 Berkshire Complete Tobacco Fertilizer, 4-3-5
 Berkshire Dry Ground Fish
 Berkshire Fine Ground Bone
 Berkshire Grass Special Fertilizer, 6-6-5
 Berkshire High Grade Tobacco Fertilizer, 5-3-6
 Berkshire Long Island Special Fertilizer, 4-8-7

Berkshire Market Garden Fertilizer, 4-8-4

Berkshire Special Mixture, 3-10-6
 Berkshire Sulphate of Ammonia
 Berkshire Superphosphate 16%
 Berkshire Tobacco Special, 6-3-7
 Berkshire Tobacco Starter Fertilizer, 4-4-15
 Berkshire Truck Fertilizer, 4-8-5

C. E. Buell, Inc., 6 Beacon St., Boston, Mass.

Two-In-One Peat Poultry Manure

Chilean Nitrate Sales Corp., 120 Broadway, New York City

Champion Brand Nitrate of Soda
 Standard Chilean Nitrate of Soda

Cobwell Reduction Co., Inc., Syracuse, N. Y.

Coreco Chemically Balanced Fertilizer, 4-6-2

The Connecticut Fat Rendering & Fertilizer Corp., West Haven, Conn.

Tankage

Consolidated Rendering Co., Boston, Mass.

Castor Pomace
 Corenco Sheep Manure
 Corenco 8-16-14 Two-In-One
 Ground Bone
 Ground Tankage
 Sulphate of Ammonia
 Superphosphate 16%

Davey Tree Expert Co., Kent, Ohio

Davey Shredded Cattle Manure
 Davey Tree Food, 10-3-3

Eastern States Farmers' Exchange, Springfield, Mass.

Eastern States 0-14-6
 Eastern States 0-20-20
 Eastern States 4-8-8
 Eastern States 4-10-6
 Eastern States 4-12-4
 Eastern States 4-16-20
 Eastern States 5-5-15 Tobacco
 Eastern States 6-3-6 Tobacco
 Eastern States 6-8-6
 Eastern States 6-15-9
 Eastern States 8-4-8 Tobacco
 Eastern States 8-16-16
 Eastern States 8-16-16 (Low Chlorine Special)
 Eastern States 8-24-8

- Eastern States 10-5-10 Tobacco
 Eastern States 10-20-20
 Eastern States 15-20-15
 Eastern States Calurea
 Eastern States Castor Pomace
 Eastern States Dry Ground Fish
 Eastern States Ground Animal Tank-
 age
 Eastern States Ground Steamed Bone
 Eastern States Muriate of Potash
 Eastern States Nitrate of Potash
 Eastern States Precipitated Bone
 Eastern States Sulphate of Ammonia
 Eastern States Sulphate of Potash
 Eastern States 16% Superphosphate
 Eastern States 32% Superphosphate
 Nitrophoska 10-20-20
 Urea
- Ed. Eggert, Hartford, Conn.**
 "Diamond EE" Cottonhull Ashes
- Essex Fertilizer Co., Boston, Mass.**
 Essex 3-10-4 Fish Brand Fertilizer For
 All Crops
 Essex 4-8-10 Peerless Potato Manure
 Essex 5-8-7 Complete Manure
- Ford Motor Co., 3674 Schaefer Road,
 Dearborn, Mich.**
 Ford Ammonium Sulphate
- L. T. Frisbie Co., New Haven, Conn.**
 Frisbie's Corn & Grain 2-10-2
 Frisbie's Fine Bone Meal
 Frisbie's Market Garden 4-8-7
 Frisbie's Special 5-8-7
 Frisbie's Special Potato Fertilizer 4-8-4
 Frisbie's Special Vegetable & Potato
 Grower 3-10-4
 Frisbie's Tobacco Grower 5-3-5
 Frisbie's Top Dresser 7-6-6
- Paul M. Hubbard & Co., Bristol, Conn.**
 Hubbard's Special Lawn Food 10-6-4
- Humphreys-Godwin Co., Memphis,
 Tenn.**
 Bull Brand 43% Protein Cottonseed
 Meal
 Dixie Brand 41% Protein Cottonseed
 Meal
- International Vegetable Oil Co., Inc.,
 Savannah, Ga.**
 High Grade Cottonseed Meal 41%
 High Grade Cottonseed Meal 43%
- Spencer Kellogg & Sons, Inc., Buffalo,
 N. Y.**
 Castor Pomace
 Kellogg's 37% Protein Pure Old
 Process Linseed Meal
- Koppers Products Co., Koppers Build-
 ing, Pittsburgh, Pa.**
 Koppers Velvet Lawn — Sulphate of
 Ammonia — Fertilizer
- L. B. Lovitt & Co., Memphis, Tenn.**
 "Lovit Brand" 41% Cottonseed Meal
 "Lovit Brand" 43% Cottonseed Meal
- Lowell Fertilizer Co., Boston, Mass.**
 Lowell 2-10-2 Bone Brand
 Lowell 3-10-4 Animal Brand, A High
 Grade Manure for All Crops
 Lowell 4-8-4 Corn and Vegetable
 Lowell 4-8-7 Old General Crop Manure
 for Potatoes and Market Garden
 Crops
 Lowell 4-8-10 Potato Grower
 Lowell 5-8-7 Market Garden Manure
 Lowell 7-6-6 Top Dressing
- Marianna Sales Co., Memphis, Tenn.**
 White Mule Brand 41% Cottonseed
 Meal
- Millane Nurseries & Tree Experts Co.,
 Cromwell, Conn.**
 Millane Shade Tree Food 8-8-4
- The Miller Fertilizer Co., Baltimore,
 Md.**
 Miller's Crop Grower 5-8-7
 Miller's Onion & Vegetable 4-8-4
 Miller's Superphosphate 16%
- Milwaukee Sewerage Commission, Mil-
 waukee, Wis.**
 Milorganite
- Natural Guano Co., Aurora, Ill.**
 "Sheep's Head" Pulverized Sheep
 Manure
- New England Fertilizer Co., Boston,
 Mass.**
 New England 2-10-2 Corn Phosphate
 New England 3-10-4 Super A High
 Grade Fertilizer for All Crops
 New England 4-8-4 Potato and Vege-
 table Manure
 New England 4-8-7 Old General Crop
 Manure for Potato and Market
 Garden Crops

- New England 4-8-10 Complete Manure
New England 5-8-7 Market Garden Manure
New England 5-8-10 Aroostook Special for Potatoes
New England 7-3-7 High Analysis Tobacco
New England Tobacco 6-3-6
- N. V. Potash Export My., Inc., Baltimore Branch, 2404 Baltimore Trust Bldg., Baltimore, Md.**
Muriate of Potash
Sulphate of Potash
- Old Deerfield Fertilizer Co., Inc., So. Deerfield, Mass.**
Dry Ground Fish
Old Deerfield 4-6-10 Tobacco Starter
Old Deerfield 5-3-5 Tobacco
Valley Brand 4-8-4
Valley Brand 4-8-7
- Olds & Whipple, Inc., Hartford, Conn.**
Luxura 5-8-6
O & W 5-3-5 Complete Tobacco Fertilizer
O & W 6-3-6 Blue Label Tobacco Fertilizer
Olds & Whipple's 3-10-4 Corn Special Fertilizer
Olds & Whipple's 4-8-4 Market Garden Fertilizer
Olds & Whipple's 4-8-7 Potato and General Purpose Fertilizer
Olds & Whipple's 5-4-15 High Grade Tobacco Starter & Potash Compound
Olds & Whipple's 5-8-7 High Grade Potato & Vegetable Fertilizer
Olds & Whipple's 8-6-6 Top Dressing and Grass Fertilizer
Olds & Whipple's Bone Meal
Olds & Whipple's Castor Pomace
Olds & Whipple's Cotton Hull Ashes
Olds & Whipple's Dry Ground Fish
Olds & Whipple's Ground Tankage
Olds & Whipple's Nitrate of Potash
Olds & Whipple's Sulphate of Ammonia
Olds & Whipple's Superphosphate
Wilcox 3-10-4 Corn Special Fertilizer
Wilcox 4-8-4 Market Garden Fertilizer
Wilcox 4-8-7 Potato & General Purpose Fertilizer
Wilcox 8-6-6 Top Dresser Fertilizer
- Pacific Manure & Fertilizer Co., 429 Davis St., San Francisco, Calif.**
Groz-It Brand Pulverized Sheep Manure
- Pedigreed Seed Co., Inc., 74 Reade St., New York City**
Laguma Special Turf Fertilizer 5-8-6
- Piedmont-Mt. Airy Guano Co., Inc., Baltimore, Md.**
Piedmont Harvest Brand 4-8-4
Piedmont Harvest Brand 5-8-7
Piedmont Harvest Brand 7-6-6
Piedmont Harvest Brand 16% Superphosphate
- Maurice Pincoffs Co., Houston, Texas**
Pinco Brand 41% Cottonseed Meal
- Plantspur Products Co., Ridgefield, N. J.**
Plantspur Fertilizer 3-3-2
- Frank S. Platt Co., New Haven, Conn.**
Platco Special 4-8-7
Platt's Special Lawn Fertilizer 10-5-5
- The Pulverized Manure Co., Chicago, Ill.**
Wizard Brand Cattle Manure
Wizard Brand Pulverized Sheep Manure
- Premier Poultry Manure Co., 327 South LaSalle St., Chicago, Ill.**
Premier Brand Pulverized Poultry Manure
Premier Brand Pulverized Sheep Manure
- John Reardon & Sons Co., Cambridge, Mass.**
Ground Bone for Fertilizer
- The Rogers & Hubbard Co., Portland, Conn.**
Golf Course Fertilizer 8-6-2
Gro-Fast Fertilizer 5-6-6
Ground Bone
Hubbard's "Bone Base" Fertilizer for Seeding Down
Hubbard's "Bone Base" Oats and Top Dressing
Hubbard's "Bone Base" Soluble Corn Manure
Hubbard's "Bone Base" Soluble Potato Manure
Hubbard's "Bone Base" Soluble Tobacco Manure
Hubbard's All Soils-All Crops Fertilizer 4-8-4
Hubbard's Climax Tobacco Brand 5-3-5

- Hubbard's Corn and Grain Fertilizer 2-12-4
 Hubbard's High Potash Fertilizer 2-8-10
 Hubbard's Potato Fertilizer 5-8-7
 Hubbard's Pure Raw Knuckle Bone Flour
 Hubbard's Rose Food 7-10-5
 Hubbard's Strictly Pure Fine Bone
 Hubbard's Tobacco Grower-Vegetable Formula 6-3-6
 Red H Brand 4-8-4 Fertilizer
 Red H Brand 4-8-7 Fertilizer
 Red H. Brand 5-8-7 Fertilizer
 Red H Brand 7-6-6 Fertilizer
 Red H Brand 8-16-14 Fertilizer
 Sheep and Goat Manure
 Superphosphate 16%
- F. Rynveld & Sons, 55 West 26th St., New York City**
 Rynveld's Bone Meal Fertilizer
- O. M. Scott & Sons Co., Marysville, Ohio**
 Scott's Turf Builder 10-6-4
- M. L. Shoemaker & Co., Inc., Philadelphia, Pa.**
 "Swift-Sure" Tobacco & General Use 3-10-3
 "Swift-Sure" Tobacco Starter 4-10-0
- Springfield Rendering Co., Springfield, Mass.**
 Springfield 3-10-4 Corn & Grain Fertilizer
 Springfield 4-8-4 General Garden Fertilizer
 Springfield 4-8-7 Potato & Vegetable Fertilizer
 Springfield 4-8-10 Complete Manure
 Springfield 5-5-5 Lawn & Shrub Fertilizer
 Springfield 5-8-7 Market Garden Fertilizer
 Springfield 6-3-6 Tobacco Special Fertilizer
 Springfield 7-6-6 Top Dresser
- Standard Wholesale Phosphate & Acid Works, Inc., Baltimore, Md.**
 Champion Nitrate of Soda
 Standard United States 2-10-2
 Standard United States 3-8-3
 Standard United States 3-12-6
 Standard United States 4-8-4
 Standard United States 4-8-7
 Standard United States 4-8-10
 Standard United States 5-4-5
 Standard United States 5-8-7
- Standard United States 5-10-5
 Standard United States 7-6-5
 Standard United States 9-8-8
 Standard United States Ground Animal Tankage
 Standard United States Raw Bone Meal
 Standard United States Sheep Manure
 Standard United States Steamed Bone Meal
 Standard United States Sulphate of Ammonia
 Standard United States Sulphate of Potash
 Standard United States 16% Superphosphate
 Standard United States 20% Superphosphate
- Summers Fertilizer Co., Inc., Baltimore, Md.**
 Lane's Sheep Manure (Manufactured for Chas. M. Lane, West Hartford, Conn.)
 Summers's "Best On Earth" Brand 3-8-4 Fertilizer
 Summers's "Best On Earth" Brand 4-8-4 Fertilizer
 Summers's "Best On Earth" Brand 5-4-5 Tobacco Special
 Summers's "Best On Earth" Brand 5-8-7 Fertilizer
 Summers's "Best On Earth" Brand 8-8-8 Fertilizer
 Summers's "Best On Earth" Brand Bone Meal
 Summers's "Best On Earth" Brand Ground Fish Meal
 Summers's "Best On Earth" Brand Sulphate of Ammonia
 Summers's "Best On Earth" Brand 16% Superphosphate
 Summers's "Best On Earth" Brand Tankage
 Summers's Genuine Venezuelan Goat Manure
- Swift & Co., Baltimore, Md.**
 Swift's Special Golf Fertilizer 12-6-4
 Vigoro 4-12-4
- Synthetic Nitrogen Products Corp., 285 Madison Ave., New York City**
 Calcium Nitrate (Nitrate of Lime)
 Cal-Nitro 16%
 Nitrophoska 15-30-15
 Urea (Florand-Urea)
- Tennessee Corp., Lockland, Ohio**
 Loma (5-10-4)
 Soil-Prep (4-2-2)

I. P. Thomas & Son Co., Philadelphia,
Pa.

I. P. Thomas 5-8-7 Fertilizer
Long Island Special 4-8-7
16% Superphosphate
Tip Top Fertilizer 3-10-6

Tobacco By-Products & Chemical
Corp., Louisville, Ky.

"Black Leaf" Tobacco-Stem Meal

Truempy, Faesy & Besthoff, Inc., 22
East 40th St., New York City

Bone Meal

Virginia-Carolina Chemical Corp., 406
National Marine Bank Bldg., Balti-
more, Md.

Bloomaid 5-10-4

Fine Ground Bone

V-C Aroostook Potato Grower 5-8-7

V-C Fairway Fertilizer 8-6-5

V-C National Brand 4-8-10

V-C Owl Brand Fertilizer 2-12-4

V-C 16% Superphosphate

V-C Tip Top Top Dresser 7-6-6

V-C XXXX Fish & Potash 4-8-5

Walker-Gordon Farms, Juliustown,
N. J.

Driconure

F. H. Woodruff & Sons, Milford, Conn.
Woodco (10-6-4) Lawn Food

S. D. Woodruff & Sons, Orange,
Conn.

Woodruff's Home Mixed Fertilizer
4-8-7

Worcester Rendering Co., Auburn,
Mass.

Prosperity All Crops Fertilizer 4-8-4

Prosperity Corn & Grain Fertilizer
2-10-2

Prosperity Market Garden 5-8-7

Prosperity Special Potato Fertilizer
4-8-10

Prosperity Superior Top Dressing
7-6-6

INSPECTION OF 1933

The Station Agent has visited 83 towns and villages in the state and has drawn 379 official samples of fertilizer, including all the registered brands that could be found. The classification of these and of other samples analyzed is given in the summary.

CLASSIFICATION OF FERTILIZER MATERIALS, 1933

	Number samples	Page
I. <i>Containing Chiefly Nitrogen</i>		
Nitrate of soda	13	19
Calcium nitrate	5	20
Calurea	1	19
Urea	1	19
Cyanamid	1	20
Ammonium sulfate	13	19
Castor pomace	18	19
Cottonseed meal	105	19
Linseed meal	13	19
II. <i>Containing Chiefly Phosphoric Acid</i>		
Superphosphate	21	24
Precipitated bone phosphate	3	24
III. <i>Containing Chiefly Potash</i>		
Carbonate of potash	4	24
Muriate of potash	4	24
Sulfate of potash	9	24
Sulfate of potash and magnesia	1	24
Cottonhull ashes	47	28
IV. <i>Containing Nitrogen and Potash</i>		
Nitrate of potash	11	28
Nitrate of potash and soda	1	28
Ground tobacco stems	2	28
V. <i>Containing Nitrogen and Phosphoric Acid</i>		
Dry ground fish	40	28
Tankage	14	28
Ground bone	38	28
VI. <i>Mixed Fertilizers</i>		
Containing nitrogen and phosphoric acid	9	36
Containing phosphoric acid and potash	2	36
Containing nitrogen, phosphoric acid and potash	204	36
Special and home mixtures	35	54
VII. <i>Miscellaneous</i>		
Sheep manure	17	58
Lime	44	58
Other miscellaneous	27	58
Check meals and fertilizers	21	58
Total	724	

I. RAW MATERIALS CHIEFLY VALUABLE FOR NITROGEN

NITRATE OF SODA AND OTHER NITROGENOUS MATERIALS

Analyses of official samples of some materials used as a source of nitrogen are given in Tables 1 and 2. Unofficial samples are not listed.

Four of the six samples of nitrate of soda examined were distinctly under the minimum guaranty of 16 per cent. Seven unofficial samples were examined for purchasers. On one of these we found 15.60 per cent of nitrogen as compared with the guaranty of 16 per cent. A commercial chemist, to whom a portion of our sample was sent on request of the manufacturer, reported 15.96 per cent. A second portion was submitted to the experiment station of a neighboring State and a figure of 15.67 per cent was reported to us.

The one official sample of calurea examined likewise was found to be low in nitrogen. Portions of this sample were sent to two commercial laboratories who reported results that were 0.5 to 0.7 per cent higher than our figure of 32.96 per cent. The tonnage in this case was small and the adjustment involved not very considerable. It is evident that in spite of the unsatisfactory checks on the sample that the goods on the *as is* basis, did not satisfy the guaranty of 34 per cent. On the moisture free basis one of the analyses exceeded 34 per cent; the other two did not.

The sample of urea examined was also below guaranty. On the moisture free basis however, the guaranty was met.

Of the samples of ammonium sulfate Nos. 2344 and 2659 were notably deficient. No. 2591 was slightly low.

VEGETABLE PRODUCTS USED AS SOURCES OF NITROGEN

Analyses of castor pomace, cottonseed and linseed meals are given in Tables 3 and 4. Only official samples are listed. Ten unofficial samples of castor pomace, 11 of linseed meal, and 99 of cottonseed meal were analyzed for purchasers.

TABLE 1. ANALYSES OF NITRATE OF SODA AND OTHER NITROGENOUS MATERIALS

Station No.	Manufacturer or jobber	Sampled from stock of	Per cent nitrogen	
			Found	Guaranteed
	Nitrate of Soda			
2336	Apothecaries Hall Co., Waterbury	J. B. McArdle, Greenwich..	15.50	16.00
2663	Champion. Associated Seed Growers, Inc., New Haven	Factory, Milford	15.84	16.00
2335	Arcadian. The Barrett Co., New York City	Davis Grain Co., Noroton..	15.96	16.00
2774	Arcadian. The Barrett Co., New York City	Tobacco Station, Windsor..	16.08	16.00
2332	Champion. Chilian Nitrate Sales Corp., New York City	T. W. Ryan, Stratford	15.70	16.00
2939	Champion. Standard Whole- sale Phosphate & Acid Works, Inc., Baltimore, Md.	Jos. Adams, Westport	15.84	16.00
	Calcium Nitrate (Nitrate of Lime)			
2584	Synthetic Nitrogen Products Corp., New York City ...	Olds & Whipple, Inc., East Hartford	14.94	15.00
2768	Cal-Nitro 16%. Synthetic Nitrogen Products Co., New York City	Chester Beeman, Granby ..	16.16	16.00
	Calurea			
2873	Eastern States Farmers' Ex- change, Springfield Mass.	E. D. Woolam, Warehouse Point	32.96 ¹	34.00
	Urea			
2817	Eastern States Farmers' Ex- change, Springfield Mass.	Paul Caldwell, New Milford	45.10 ²	46.00
	Cyanamid			
2337	Aero. American Cyanamid Co., New York City	H. D. Peters, Highwood ..	22.00	22.00

¹Moisture 1.58 per cent; insoluble in water 0.80 per cent.²Moisture 1.94 per cent.

TABLE 2. ANALYSES OF SULFATE OF AMMONIA

Station No.	Manufacturer or jobber	Sampled from stock of	Per cent nitrogen	
			Found	Guaranteed
2343	American Agricultural Chemical Co., West Haven	Factory, West Haven	20.82	20.56
2339	Arcadian. The Barrett Co., New York City	H. D. Peters, Highwood ..	20.64	20.56
2583	The Barrett Co., New York City	Valley Grain Co., Stafford Springs	20.64	20.56
2700	Berkshire Chemical Co., Bridgeport	H. E. Meeker, Danbury ...	20.76	20.56
2333	Consolidated Rendering Co., Boston, Mass.	L. T. Frisbie Co., New Haven	20.88	20.50
2593	Eastern States. Eastern States Farmers' Exchange, Springfield, Mass.	E. D. Woolam, Warehouse Point	20.84	20.50
2694	Ford. Ford Motor Co., Dearborn, Mich.	O'Meara Motor Co., East Hartford	20.88	20.80
2591	Koppers Velvet Lawn. Koppers Products Co., Pittsburgh, Pa.	Cadwell & Jones, Hartford	20.60	20.75
2342	Olds & Whipple's. Olds & Whipple, Inc., Hartford ..	Factory, Hartford	20.56	20.56
2334	Standard Wholesale Phosphate & Acid Works, Baltimore, Md.	Rippe Bros., Westport	19.20	20.56
2659	Summers's "Best on Earth." Summers Fertilizer Co., Baltimore, Md.	Rackliffe Bros., New Britain	18.97	20.56

TABLE 3. ANALYSES OF CASTOR POMACE

Station No.	Manufacturer or jobber	Sampled from stock of	Per cent nitrogen	
			Found	Guaranteed
2344	American Agricultural Chemical Co., West Haven	Factory, West Haven	4.62	4.53
2338	Apothecaries Hall Co., Waterbury	H. D. Peters, Highwood ...	5.17	4.52
2836	Baker Castor Oil Co., New York City	Mohn Bros., Warehouse Point	6.00	4.50
2331	Berkshire. Berkshire Chemical Co., Bridgeport	T. W. Ryan, Stratford	4.69	4.50
2740	Consolidated Rendering Co., Boston, Mass.	A. E. Shedd, Norwich	5.70	4.52
2652	Eastern States. Eastern States Farmers' Exchange, Springfield, Mass.	E. D. Woolam, Warehouse Point	4.63	4.50
2340	Kellogg's. Spencer Kellogg & Sons, Inc., Buffalo, N.Y.	Chas. C. Hart Seed Co., Wethersfield	5.79	4.52
2341	Olds & Whipple, Inc., Hartford	Factory, Hartford	4.88	4.50

TABLE 4. ANALYSES OF COTTONSEED MEAL AND LINSEED MEAL

Station No.	Manufacturer or jobber	Sampled from stock of	Per cent nitrogen	
			Found	Guaranteed
Cottonseed Meal				
2874	Helmet Brand. Ashcraft-Wilkinson Co., Atlanta, Ga. ..	E. J. Bantle, Glastonbury..	6.68	6.58
2850	Bull Brand 43%. Humphreys-Godwin Co., Memphis, Tenn.	David McComb, Suffield...	6.64	6.88
2754	Dixie Brand 41%. Humphreys-Godwin Co., Memphis, Tenn.	Henry Cybulski, Somers ..	6.63	6.56
2830	"Lovit Brand" 41%. L. B. Lovitt & Co., Memphis, Tenn.	H. H. McKnight, Ellington	6.62	6.56
2764	"Lovit Brand" 43%. L. B. Lovitt & Co., Memphis, Tenn.	E. D. Woolam, Warehouse Point	6.91	6.88
2871	White Mule Brand 41% Cottonseed Meal. Marianna Sales Co., Memphis, Tenn.	Paul Caldwell, New Milford	6.65	6.58
Linseed Meal				
3177	Apothecaries Hall Co., Waterbury	Factory, East Hartford	5.56	4.50
2735	Old Process. Spencer Kellogg & Sons, Inc., Buffalo, N. Y.	Hatheway & Steane, Inc., West Suffield	6.22	5.92

II. RAW MATERIALS CHIEFLY VALUABLE FOR PHOSPHORIC ACID

SUPERPHOSPHATE

Superphosphate is a raw material of basic importance in the fertilizer industry. It is made by a process originated by Liebig in 1840. In the United States superphosphate is made by treating phosphate rock with sulfuric acid. The finished product contains 16 per cent of available phosphoric acid. "Double superphosphate" is a similar product made by so treating phosphate rock that practically all of the calcium is converted into mono-calcium phosphate. Double phosphate contains 32 per cent of available phosphoric acid.

Analyses are given in Table 5.

PRECIPITATED BONE PHOSPHATE

Precipitated bone phosphate is made by dissolving the phosphate of bones in hydrochloric acid and neutralizing the acid solution with calcium hydroxide. The precipitated phosphate is largely dicalcium phosphate insoluble in water but soluble in ammonium citrate and hence classed as available phosphoric acid. Precipitated phosphate may be made from rock phosphate by a similar process. All of the samples of superphosphate, double superphosphate and precipitated bone phosphate met or exceeded guaranties.

Analyses are given in Table 5.

III. RAW MATERIALS CHIEFLY VALUABLE FOR POTASH

POTASH SALTS

Potash in mixed fertilizers is usually derived from carbonate of potash (62—65 per cent K_2O), muriate of potash (48—50 per cent K_2O), sulphate of potash (48—50 per cent K_2O), or double sulphate of potash and magnesia (25 per cent K_2O). The chlorine content of the sulfate and the double sulfate should not exceed 2.5 per cent.

Analyses of official samples of these materials are given in Table 6. All met or exceeded guaranties.

TABLE 5. ANALYSES OF SUPERPHOSPHATE (ACID PHOSPHATE), ETC.

Station No.	Manufacturer or wholesale dealer	Dealer or purchaser	Phosphoric acid			
			Citrate insoluble	Total	"Available"	
					Found	Guaranteed
Superphosphate						
2514	AA 16%. American Agricultural Chemical Co., West Haven	Geo. S. Phelps & Co., Thompsonville..	%	%	%	%
2528	Apothecaries Hall Co., Waterbury	Cheshire Reformatory, Cheshire	0.82	16.95	16.13	16.00
2461	Apothecaries Hall Co., Waterbury	H. D. Peters, Highwood	0.42	17.34	16.92	16.00
2690	Armour's Big Crop Fertilizers 16%. Armour Fertilizer Works, New York City		0.55	19.11	18.56	18.00
2771	Associated Seed Growers, Inc., New Haven	Geo. S. Phelps & Co., Thompsonville ..	0.25	16.79	16.54	16.00
2421	Berkshire 16%. Berkshire Chemical Co., Bridgeport	Dan Smith, Milford	0.28	17.18	16.90	16.00
2443	Consolidated Rendering Co., Boston, Mass.	T. W. Ryan, Stratford	0.27	17.43	17.16	16.00
2555	Eastern States 16%. Eastern States Farmers' Exchange, Springfield, Mass.	L. T. Frisbie Co., New Haven	0.07	18.28	18.21	16.00
2753	Eastern States 32%. Eastern States Farmers' Exchange, Springfield, Mass.	A. L. Lockwood, Clinton	0.93	17.50	16.57	16.00
2522	Miller's 16%. Miller Fertilizer Co., Baltimore, Md.	O. D. Tuller, West Simsbury	0.26	32.32	32.06	32.00
2484	Olds & Whipple's. Olds & Whipple, Inc., Hartford	C. A. Cowles, Plantsville	0.41	16.93	16.52	16.00
		Julius Lewis, Southington	0.20	19.17	18.97	16.00

TABLE 5. ANALYSES OF SUPERPHOSPHATE (ACID PHOSPHATE), ETC.—(Concluded)

Station No.	Manufacturer or wholesale dealer	Dealer or purchaser	Phosphoric acid			
			Citrate-insoluble	Total	"Available"	
					Found	Guaranteed
Superphosphate—Concluded						
2531	The Rogers & Hubbard Co., Portland	Factory, Portland	0.55	17.26	16.71	16.00
22699	Standard United States 16%. Standard Wholesale Phosphate & Acid Works, Inc., Baltimore, Md.	F. C. Benjamin, Danbury	0.96	17.94	16.98	16.00
1393 ¹	Summers' 16-20. Summers Fertilizer Co., Baltimore, Md.	Ben Webster, Litchfield	3.12	20.42	17.30	16.00
2565	Summers's "Best-On-Earth" 16%. Summers Fertilizer Co., Baltimore, Md.	Chas. Peabody, New London	3.65	20.37	16.72	16.00
2551	I. P. Thomas & Son, Philadelphia, Pa. . . .	Fred C. Morse & Son, Guilford	0.40	17.84	17.44	16.00
2681	V-C 16%. Virginia-Carolina Chemical Co., Baltimore, Md.	P. Levson & Son, Middletown	2.35	18.50	16.15	16.00
Precipitated Bone Phosphate						
2654	Apothecaries Hall Co., Waterbury	Factory, East Windsor	0.82	42.24	41.42	36.00
2686	Eastern States, Eastern States Farmers' Exchange, Springfield, Mass.	H. H. McKnight, Ellington	0.42	41.80	41.38	38.00

¹Late registration for 1932, represents last year's stock.

TABLE 6. ANALYSES OF POTASH SALTS

Station No.	Manufacturer or jobber	Sampled from stock of	Potash	
			Found	Guaranteed
	Carbonate of Potash		%	%
2926	Apothecaries Hall Co., Waterbury	Factory, East Windsor	66.56	60.00
	Muriate of Potash			
2553	American Agricultural Chem- ical Co., West Haven	Factory, West Haven	48.82	50.00
2696	Eastern States. Eastern States Farmers' Exchange, Springfield, Mass.	Paul W. Caldwell, New Mil- ford	51.56	50.00
2423	N. V. Potash Export My., Inc., Baltimore, Md.	T. W. Ryan, Stratford	51.08	48.00
	Sulfate of Potash			
2592	Eastern States. Eastern States Farmers' Exchange, Springfield, Mass.	E. D. Woolam, Warehouse Point	50.22	48.00
2517	N. V. Potash Export My., Inc., Baltimore, Md.	Geo. S. Phelps & Co., Thompsonville	49.31	48.00
2687	Standard Wholesale Phos- phate & Acid Works, Bal- timore, Md.	H. H. McKnight, Ellington	48.95	48.00
	Sulfate of Potash and Magnesia			
3175	Apothecaries Hall Co., Waterbury	Factory, East Windsor	26.75	26.00

COTTONHULL ASHES

Ashes of cottonhulls are used to a considerable extent in fertilizer mixtures for tobacco. They are quite variable in composition and are sold on a unit basis. Official samples examined this year continued from 18 to nearly 40 per cent of actual potash. Only four official samples were drawn; but 42 samples were examined for purchasers.

Analyses of official samples are given in Table 7.

IV. RAW MATERIALS CONTAINING NITROGEN AND POTASH

Official samples of materials of this group have been confined to 3 samples of nitrate of potash and one of tobacco stems. A number of others, including one of nitrate of potash and soda, have been examined for purchasers. One official sample of nitrate of potash, 3176, was somewhat below guaranty in both of the guaranteed items of plant food.

Analyses are given in Table 8.

V. RAW MATERIALS CONTAINING NITROGEN AND
PHOSPHORIC ACID

FISH, TANKAGE, BONE

Dry ground fish will contain 8 per cent or more of nitrogen and 5 to 6 per cent of phosphoric acid.

All of the official samples of this material were of satisfactory quality and met or exceeded guaranties. Thirty-three unofficial samples were analyzed.

Chlorine content ranged from .08 to .25 per cent.

Analyses of official samples are given in Table 9.

Ten official samples of tankage were analyzed two of which were low grade but met their guaranties. Two samples, 2702 and 3081, failed to meet the guaranty of 8 per cent nitrogen by considerable amounts.

Analyses are given in Table 10. Four unofficial samples are not included.

Nineteen official samples of ground bone were analyzed, and a like number were examined for purchasers. All samples met or considerably exceeded the guaranteed content of nitrogen; and only two were considerably deficient in phosphoric acid.

Two of the unofficial samples contained calcium carbonate, but the amount was such as to suggest accidental contamination rather than adulteration.

Analyses of official samples are given in Table 11.

TABLE 7. ANALYSES OF COTTONHULL ASHES

Station No.	Manufacturer or wholesale dealer	Sampled from stock of	Phosphoric acid	Potash
			%	%
2656	Apothecaries Hall Co., Waterbury	Factory, East Windsor	2.25	36.55
2595	Ed. Eggert, Hartford	Hatheway & Steane, Inc., West Suffield	2.07	18.21
2596	Ed. Eggert, Hartford	Hatheway & Steane, Inc., West Suffield	1.98	20.54
2544	Olds & Whipple's, Olds & Whipple, Inc., Hartford ..	Factory, Hartford	2.22	39.63

TABLE 8. ANALYSES OF NITRATE OF POTASH, ETC.

Station No.	Manufacturer	Sampled from stock of	Nitrogen		Potash	
			Found	Guaranteed	Found	Guaranteed
			%	%	%	%
3176	Nitrate of Potash Apothecaries Hall Co., Waterbury	Factory, East Windsor	12.80	13.00	43.74	44.00
2653			12.92	13.00	44.42	44.00
2545			13.92	13.00	44.58	44.00
2549	Ground Tobacco Stems Black Leaf Tobacco Stem Meal. Tobacco By-Products & Chemical Corp., Louis- ville, Ky.	Olds & Whipple, Inc., East Hartford ..	1.50	1.16	4.79	4.00

TABLE 9. ANALYSES OF DRY GROUND FISH

Station No.	Manufacturer or wholesale dealer	Sampled from stock of	Nitrogen		Phosphoric acid		Chlorine
			Total found	Total guaranteed	Total found	Total guaranteed	
2515	American Agricultural Chemical Co., West Haven	Geo. S. Phelps & Co., Thompsonville	% 9.04	% 9.00	% 8.44	% 6.00	% 0.08
2655	Apothecaries Hall Co., Waterbury	Factory, East Windsor	9.24	8.22	7.13	5.00	0.08
2420	Berkshire Chemical Co., Bridgeport	T. W. Ryan, Stratford	9.35	9.04	6.17	6.00	0.14
2750	Eastern States Farmers' Exchange, Springfield, Mass.	E. W. Woolam, Warehouse Point	9.50	9.00	8.55	6.00	0.25
2876	Old Deerfield Fertilizer Co., So. Deerfield, Mass.	L. B. Haas, Hazardville	9.12	9.05	8.24	5.00	0.15
2543	Olds & Whipple, Inc., Hartford	Factory, Hartford	9.94	9.00	7.00	5.00	0.16
2692	Summers's "Best-On-Earth," Summers Fertilizer Co., Baltimore, Md.	John Leonard, East Hartford	9.03	9.00	7.88	6.86	0.22

TABLE 10. ANALYSES OF TANKAGE AND SIMILAR MATERIALS

Station No.	Manufacturer	Sampled from stock of	Nitrogen		Phosphoric acid		Mechanical analysis		Station No.
			Total found	Total guaranteed	Total found	Total guaranteed	Finer than 1-50 inch	Coarser than 1-50 inch	
2820	Apothecaries Hall Co., Waterbury	J. A. Glassnapp, West Cheshire	% 4.12	% 3.29	% 20.92	% 20.00	% 58.1	% 41.9	2820
2460	Apothecaries Hall Co., Waterbury	H. D. Peters, Highwood	% 8.68	% 7.40	% 10.31	% 3.00	% 34.6	% 65.4	2460
2441	The Connecticut Fat Rendering & Fertilizer Corp., West Haven	Factory, West Haven	% 4.17	% 3.29	% 21.92	% 22.88	% 53.3	% 46.7	2441
2828	Consolidated Rendering Co., Boston, Mass.	John Luginbuhl, Ellington ..	% 10.03	% 7.41	% 8.26	% 9.15	% 25.6	% 74.4	2828
2432	Consolidated Rendering Co., Boston, Mass.	Paul M. Hubbard & Co., Bristol	% 7.26	% 7.41	% 8.45	% 9.15	% 57.0	% 43.0	2432
2442	Consolidated Rendering Co., Boston, Mass.	L. T. Frisbie Co., New Haven	% 7.67	% 7.41	% 9.90	% 9.15	% 40.5	% 59.5	2442
2709	Olds & Whipple's, Olds & Whipple, Inc., Hartford	J. B. Lewis, Southington	% 10.12	% 7.40	% 8.19	% 9.15	% 30.4	% 69.6	2709
2676	Standard United States, Standard Wholesale Phosphate & Acid Works, Inc., Baltimore, Md.	Rackliffe Bros., New Britain .	% 6.26	% 6.00	% 11.37	% 9.15	% 46.8	% 53.2	2676
2702	Summers' "Best On Earth." Summers Fertilizer Co., Baltimore, Md.	Chas. M. Lane, West Hartford	% 7.30	% 8.00	% 6.72	% 4.57	% 36.6	% 63.4	2702
3081	Summers' "Best On Earth." Summers Fertilizer Co., Baltimore, Md.	Chas. M. Lane, West Hartford	% 7.37	% 8.00	% 7.16	% 4.57	% 37.4	% 62.6	3081

TABLE 11. ANALYSES OF GROUND BONE

Station No.	Manufacturer	Sampled from stock of	Nitrogen		Phosphoric acid		Mechanical analysis		Station No.
			Total found	Total guaranteed	Total found	Total guaranteed	Finer than 1-50 inch	Coarser than 1-50 inch	
			%	%	%	%	%	%	
2447	Fine Ground. American Agricultural Chemical Co., West Haven	F. H. Woodruff & Sons, Milford	2.68	2.47	24.09	23.00	68.0	32.0	2447
2459	Apothecaries Hall Co., Waterbury	H. D. Peters, Highwood	4.26	3.29	23.01	20.00	57.5	42.5	2459
2815	Armour's, Armour Fertilizer Works, New York City	Silliman Hardware Co., New Canaan	3.24	2.47	24.28	22.00	67.5	32.5	2815
2870	Armour's Raw. Armour Fertilizer Works, New York City	Silliman Hardware Co., New Canaan	3.73	3.70	18.98	20.00	35.7	64.3	2870
2538	Berkshire Fine Ground. Berkshire Fertilizer Co., Bridgeport	Seymour Grain & Coal Co., Seymour	3.02	2.47	23.40	20.00	57.7	42.3	2538
2481	Ground Bone. Consolidated Rendering Co., Boston, Mass.	Davis Grain Co., Noroton ...	4.04	2.05	23.38	22.90	51.1	48.9	2481
2748	Eastern States Ground Steamed. Eastern States Farmers' Exchange, Springfield, Mass.	J. E. Stoddard, Abington	3.40	2.50	24.32	23.00	54.7	45.3	2748
2761	Frisbie's Fine Bone. L. T. Frisbie Co., New Haven	Frank S. Platt Co., New Haven	4.19	3.28	23.90	22.00	29.5	70.5	2761
2547	Olds & Whipple's. Olds & Whipple, Inc., Hartford	Factory, Hartford	3.24	2.47	22.81	22.00	57.9	42.1	2547
2569	Ground Bone. John Reardon & Sons Co., Cambridge, Mass.	Norwich Grain Co., Norwich	4.13	2.47	22.05	22.88	57.4	42.6	2569

TABLE 11. ANALYSES OF GROUND BONE—(Continued)

Station No.	Manufacturer	Sampled from stock of	Nitrogen		Phosphoric acid		Mechanical analysis		Station No.
			Total found	Total guaranteed	Total found	Total guaranteed	Finer than 1.50 inch	Coarser than 1.50 inch	
			%	%	%	%	%	%	
2535	Ground Bone. The Rogers & Hubbard Co., Portland	Chas. C. Hart Seed Co., Wethersfield	2.94	2.47	23.43	22.85	72.4	27.6	2535
2587	Hubbard's Pure Raw Knuckle Bone Flour. The Rogers & Hubbard Co., Portland ..	Cadwell & Jones, Hartford ..	3.84	3.69	26.56	24.70	83.8	16.2	2587
2590	Hubbard's Strictly Pure Fine Bone. The Rogers & Hubbard Co., Portland	Cadwell & Jones, Hartford ..	3.70	3.29	26.18	20.50	56.3	43.7	2590
2814	Rynveld's Bone Meal Fertz. F. Rynveld & Sons, New York City	F. W. Woolworth, New Haven	2.74	1.85	22.95	22.88	70.3	29.7	2814
2685	Standard United States Raw. Standard Wholesale Phosphate & Acid Works, Inc., Baltimore, Md.	H. H. McKnight, Ellington .	3.85	3.70	22.58	22.00	39.7	60.3	2685
2698	Standard United States Steamed. Standard Wholesale Phosphate & Acid Works, Inc., Baltimore, Md.	F. C. Benjamin, Danbury ...	2.92	2.47	22.35	22.00	52.7	47.3	2698
2658	Summers's "Best On Earth." Summers Fertilizer Co., Baltimore, Md.	Stanley Svea Coal Co.,	4.37	4.00	23.64	22.88	42.9	57.1	2658
2878	Truempy, Faesy & Besthoff, New York City	New Britain	3.00	2.40	22.24	22.50	64.8	35.2	2878
2541	Fine Ground. Virginia-Carolina Chemical Co., Baltimore, Md.	Washington Supply Co., Washington Depot	2.78	2.47	23.22	23.00	72.5	27.5	2541
		Thomaston Supply Co., Thomaston							

VI. MIXED FERTILIZERS

(A) MIXTURES SUPPLYING NITROGEN AND PHOSPHORIC ACID

Four official samples of this type were examined. Five samples were examined for a purchaser.

2548. Ammo-Phos, 11-48-0. American Cyanamid Co., New York City. Stock of Olds & Whipple, Inc., East Hartford, Conn.

2585. Ammo-Phos, 16-20-0. American Cyanamid Co., New York City. Stock of Olds & Whipple, Inc., East Hartford, Conn.

2490. Liberty Special Fertilizer for Lawns, Gardens, Flowers, Shrubs, Trees, 4-4-0. Apothecaries Hall Co., Waterbury, Conn. Stock of J. B. McArdle, Greenwich.

2513. "Swift-Sure" Tobacco Starter 4-10-0. M. L. Shoemaker & Co., Philadelphia, Pa. Stock of Spencer Bros., Suffield.

The analyses were as follows.

	2548	2585	2490	2513
	%	%	%	%
Nitrogen found	10.97	16.00	4.38	4.12
guaranteed	11.00	16.00	4.00	4.00
Available P_2O_5 found	48.00	20.73	8.76	10.12
guaranteed	48.00	20.00	4.00	10.00
Water-insoluble organic nitrogen	0.47	0.26	3.72	1.06
Activity water-insoluble organic nitrogen, alkaline method	100.00	—	64.80	67.60

(B) MIXTURE SUPPLYING PHOSPHORIC ACID AND POTASH

One official sample of this class was analyzed. One sample was examined for a purchaser.

2755. Eastern States 0-14-6. Eastern States Farmers' Exchange, Springfield, Mass. Stock of Chester Beeman, Granby. It contained 14.98 per cent of available phosphoric acid and 5.86 per cent of potash.

(C) MIXTURES SUPPLYING NITROGEN, PHOSPHORIC ACID AND POTASH

In this group there are 194 official samples of registered brands. Analyses are given in Table 12. Groups a, b and c may be summarized as follows:

Total number of samples	199
Samples deficient in:	
one item	39
two items	8
three items	0
Percentage of samples failing to meet guaranties in all respects	24
Total guaranties made	592
Guaranties not met:	
nitrogen	28
available phosphoric acid	12
potash	17
Guaranties substantially met or exceeded	535
Percentage of guaranties met	90
Samples showing commercial deficiencies exceeding \$1.00 per ton	6
Percentage of samples deficient by more than \$1.00 per ton	3

These data show that 24 per cent of the samples analyzed failed to meet guaranties for all of the three items of plant food guaranteed. Most of the samples were deficient in only one item; none were deficient in all three. Seventy-six per cent of the samples examined met guaranties in all respects.

Of total guaranties made 90 per cent were substantially met or exceeded.

In those samples showing deficiencies the approximate commercial value represented exceeded \$1.00 per ton in only 6 cases, or 3 per cent of the total number of samples analyzed. This estimate is based on valuations for nitrogen, available phosphoric acid and potash of 12 cents, 4 cents and 5 cents respectively; and shortages in one item are balanced against overages in another.

In spite of the generally satisfactory condition shown by this summary the reader will probably be chiefly impressed by the fact that only about three-fourths of the samples examined are found to meet their guaranties in all of the three items of plant food guaranteed. A study of similar data for the past 10 years shows, however, that marked improvement has been made in this particular and in other features summarized.

In 1923 the inspection showed that of 261 samples analyzed only 55 per cent met or exceeded guaranties in all particulars as compared with 76 per cent in 1933. In 1923 also the commercial values represented by deficiencies exceeded \$1.00 per ton in 17 per cent of the samples analyzed as compared with 3 per cent in 1933. The improvement in these two respects has been progressive and notably consistent during this interval as shown by the following tabulation.

Year	Total number of samples	Substantially meeting guaranties in N, P ₂ O ₅ and K ₂ O	Showing commercial deficiencies of \$1.00 or more per ton
		%	%
1923	261	55	17
1924	282	60	7
1925	255	67	13
1926	247	66	11
1927	243	68	7
1928	250	71	13
1929	239	72	9
1930	236	80	3
1931	235	74	3
1932	222	76	3
1933	199	76	3

The distribution of chemical deficiencies found in the inspection this year is given in Table 12a. Mixed fertilizers of groups a, b and c are included.

Samples showing commercial deficiencies estimated at \$1.00 or more per ton are as follows.

2560	Standard Wholesale Phosphate & Acid Works	\$3.33
2968	Standard Wholesale Phosphate & Acid Works	3.40
2454	Standard Wholesale Phosphate & Acid Works	1.30
2510	Swift & Co., 12-6-4	2.66
3318	Swift & Co., 12-6-4	1.47
2747	Synthetic Nitrogen Products Corp	1.78

Similar data compiled for the period 1921—1933 are given in Table 12b.

TABLE 12. ANALYSES OF MIXED FERTILIZER

Station No.	Manufacturer and brand	Place of sampling
American Agricultural Chemical Co., West Haven, Conn.		
2431	AA Aroostook Potato Manure 5-8-7	Milford.....
2574	AA Corn Favorite 3-10-4	Lebanon.....
2500	AA General Crop Fertilizer 2-10-2	Meriden.....
2847	AA Hi Grade Tobacco Manure 6-3-6	Windsor.....
3268	AA Hi Grade Tobacco Manure 6-3-6	West Haven.....
2446	AA Monarch Fertilizer 4-8-4	Milford.....
2501	AA Peerless Fertilizer 4-8-7	Meriden.....
2492	AA Prolific 10% Potash Fertilizer, 2-8-10	North Haven.....
2853	AA Tobacco Starter 5-5-15	Suffield.....
2504	AA Top Dresser 7-6-6	New Britain.....
2552	Agrico for Aroostook 5-8-7	Guilford.....
2571	Agrico for Corn 3-10-6	Norwich.....
2502	Agrico for Lawns, Trees and Shrubs 7-6-6 ...	Meriden.....
2892	Agrico for Lawns, Trees and Shrubs 7-6-6 ...	Bloomfield.....
2922	Agrico for Lawns, Trees and Shrubs 7-6-6 ...	West Haven.....
2923	Agrico for Lawns, Trees and Shrubs 7-6-6 ...	Meriden.....
2503	Agrico for New England 4-8-10	New Britain.....
2491	Agrico for Truck 4-10-5	North Haven.....
2524	Bowker's Market Garden Fertilizer 4-8-4	Plantsville.....
2770	Bowker's Stockbridge Early Crop Manure 5-8-7	West Haven.....
2433	Bradley's Blood Bone and Potash Brand 5-8-7	Plantsville.....
2512	Bradley's XL Fertilizer 3-10-4	Windsor Locks.....
2823	Double A Tobacco Fertilizer 5-3-5	Thompsonville.....
3269	Double A Tobacco Fertilizer 5-3-5	West Haven.....
2848	Sanderson Formula B 4-8-7 (Potash Derived from Sulfate)	Windsor.....
3267	Sanderson Formula B 4-8-7 (Potash Derived from Sulfate)	West Haven.....
Apothecaries Hall Co., Waterbury, Conn.		
3180	Liberty Corn 2-10-2	East Windsor.....
3179	Liberty Fish Bone and Potash 3-10-4	East Windsor.....
2489	Liberty High Grade Corn 2-12-4	Greenwich.....
2462	Liberty High Grade Market Gardeners 5-8-7..	Highwood.....
2925	Liberty High Grade Tobacco Manure 6-3-7 ...	East Windsor.....
2488	Liberty Market Gardeners Special 4-8-4	Greenwich.....
2749	Liberty Onion Special (Potash Derived from Sulfate) 4-8-7	East Windsor.....
3178	Liberty Potato and General Crop 4-8-10	East Windsor.....
3181	Liberty Potato and Market Gardeners (Potash as Muriate) 4-8-7	East Windsor.....
2572	Liberty Special Fertilizer for Fruit 7-8-6	Yantic.....
2573	Liberty Top Dresser for Grass and Grain 8-8-8	Yantic.....

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Nitrogen					Phosphoric acid			Potash		Station No.
In nitrates	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
0.00	4.42	0.16	0.46	5.04	0.59	8.66	8.07	7.39	7.39	2431
0.00	2.70	0.11	0.36	3.17	0.58	11.02	10.44	4.30	4.30	2574
0.00	1.72	0.01	0.35	2.08	0.71	11.14	10.43	2.23	2.23	2500
0.55	0.56	1.20	3.47	5.78	0.21	3.66	3.45	0.62	6.59	2847
0.58	0.42	1.08	3.74	5.82	0.22	3.32	3.10	0.36	6.12	3268
0.00	3.42	0.20	0.51	4.13	0.55	8.98	8.43	4.16	4.16	2446
0.00	3.42	0.17	0.57	4.16	0.57	8.92	8.35	6.80	6.80	2501
0.00	1.76	0.11	0.25	2.12	0.40	8.83	8.43	9.89	9.89	2492
0.67	2.42	0.82	1.05	4.96	0.27	5.88	5.61	1.14	15.02	2853
0.53	6.28	0.12	0.45	7.38	0.40	7.10	6.70	5.98	5.98	2504
0.00	4.54	0.00	0.48	5.02	0.55	9.24	8.69	7.31	7.31	2552
0.00	2.64	0.05	0.43	3.12	0.79	11.39	10.60	5.91	5.91	2571
0.31	6.00	0.16	0.43	6.90	0.38	7.15	6.77	6.00	6.00	2502
0.27	6.62	0.16	0.48	7.53	0.44	6.97	6.53	5.66	5.66	2892
0.24	6.06	0.18	0.32	6.80	0.32	6.65	6.33	5.81	5.81	2922
0.30	6.16	0.08	0.40	6.94	0.43	7.10	6.67	5.93	5.93	2923
0.00	3.36	0.18	0.49	4.03	0.32	9.03	8.71	10.29	10.29	2503
0.00	3.36	0.18	0.46	4.00	0.70	10.98	10.28	5.22	5.22	2491
0.00	3.36	0.12	0.53	4.01	0.48	8.81	8.33	4.07	4.07	2524
0.38	3.16	1.08	0.38	5.00	0.48	9.30	8.82	6.93	6.93	2770
0.08	4.48	0.00	0.47	5.03	0.60	9.05	8.45	6.90	6.90	2433
0.00	2.78	0.10	0.42	3.30	0.54	11.09	10.55	4.72	4.72	2512
0.52	0.64	0.84	2.74	4.74	0.19	3.27	3.08	0.41	4.63	2823
0.77	1.06	0.62	2.73	5.18	0.28	3.52	3.24	0.25	4.94	3269
0.29	1.94	0.82	1.25	4.30	0.59	10.17	9.58	1.14	6.63	2848
0.00	3.54	0.17	0.45	4.16	0.43	8.67	8.24	0.72	6.90	3267
0.28	1.44	0.34	0.55	2.61	0.72	10.91	10.19	3.12	3.12	3180
1.39	1.34	0.22	0.38	3.33	0.36	10.59	10.23	4.22	4.22	3179
0.00	1.66	0.36	0.48	2.50	0.35	12.51	12.16	4.61	4.61	2489
1.31	2.28	0.58	0.93	5.10	0.26	8.05	7.79	8.08	8.08	2462
1.46	0.04	0.60	4.40	6.50	0.15	5.39	5.24	0.60	7.60	2925
1.22	1.08	0.92	1.09	4.31	0.64	9.61	8.97	4.16	4.16	2488
0.38	2.56	0.64	0.83	4.41	1.11	13.29	12.18	0.58	7.40	2749
0.21	2.54	0.30	1.13	4.18	0.57	8.25	7.68	10.51	10.51	3178
1.08	2.54	0.32	0.22	4.16	0.57	8.46	7.89	7.84	7.84	3181
4.06	2.12	0.22	0.90	7.30	0.68	9.68	9.00	4.09	6.96	2572
0.00	6.06	0.15	2.13	8.34	0.15	8.74	8.59	8.52	8.52	2573

TABLE 12. ANALYSES OF MIXED FERTILIZER

Station No.	Manufacturer and brand	Place of sampling
	Armour Fertilizer Works, New York City	
2689	Armour's Big Crop Fertilizers 4-8-4	Thompsonville.....
2742	Armour's Big Crop Fertilizers 5-8-7	Colchester.....
2763	Armour's Big Crop Fertilizers 6-11-10	Colchester.....
2741	Armour's Big Crop Fertilizers 7-6-6	Colchester.....
2825	Armour's Big Crop Fertilizer Tobacco Special 5-3-5	Thompsonville.....
	Associated Seed Growers, Inc., New Haven, Conn.	
2819	Clark's Special Mixture for General Use 3-8-4	Orange.....
2662	Clark's Special Mixture 6% Potash 3-8-6	Milford.....
2660	Clark's Special Super High Grade 5-8-7	Orange.....
2449	Clark's Tip Top Brand 4-8-7	Milford.....
	F. A. Bartlett Tree Expert Co., Stamford, Conn.	
2485	Bartlett Green Tree Food 6-7-4	Factory.....
	Berkshire Chemical Co., Bridgeport, Conn.	
2511	Berkshire 5-8-7 Fertilizer	Plainville.....
2456	Berkshire Complete Fertilizer 2-12-2	Norwalk.....
2924	Berkshire Complete Tobacco Fertilizer 4-3-5 ..	Wapping.....
2661	Berkshire Grass Special Fertilizer 6-6-5	Milford.....
2877	Berkshire High Grade Tobacco Fertilizer 5-3-6	Hazardville.....
2526	Berkshire Long Island Special Fertilizer 4-8-7	Highwood.....
2458	Berkshire Market Garden Fertilizer 4-8-4	Norwalk.....
2525	Berkshire Special Mixture 3-10-6	Highwood.....
2855	Berkshire Tobacco Special Fertilizer 6-3-7	Ellington.....
2856	Berkshire Tobacco Starter Fertilizer 4-4-15 ..	Ellington.....
2812	Berkshire Truck Fertilizer 4-8-5	Factory.....
	Consolidated Rendering Co., Boston, Mass.	
2760	Corenco 8-16-14 Two-in-One	Woodbury.....
	Davey Tree Expert Co., Kent, Ohio	
2486	Davey Tree Food 10-3-3	Old Greenwich.....
	Eastern States Farmers' Exchange, Springfield, Mass.	
2558	Eastern States 4-8-8	Clinton.....
2832	Eastern States 4-10-6	Warehouse Point.....
2559	Eastern States 4-12-4	Waterford.....

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Nitrogen					Phosphoric acid			Potash		Station No.
In nitrates	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
0.34	3.00	0.12	0.35	3.81	0.42	8.29	7.87	4.13	4.13	2689
0.81	3.40	0.16	0.65	5.02	0.19	8.53	8.34	7.02	7.02	2742
0.53	5.20	0.18	0.09	6.00	0.36	12.30	11.94	9.10	9.78	2763
0.51	5.90	0.26	0.07	6.74	0.36	6.58	6.22	5.83	5.83	2741
2.24	0.06	0.30	2.37	4.97	0.16	3.61	3.45	0.49	5.10	2825
0.00	2.50	0.45	0.38	3.33	0.25	8.89	8.64	4.64	4.64	2819
0.00	1.88	0.63	0.59	3.10	0.50	9.00	8.50	6.56	6.56	2662
0.00	4.20	0.74	0.49	5.43	0.45	8.75	8.30	7.36	7.36	2660
0.51	2.76	0.02	0.83	4.12	0.50	9.16	8.66	7.32	7.32	2449
0.00	5.28	0.00	0.95	6.23	1.76	10.10	8.34	4.93	4.93	2485
0.00	3.94	0.62	0.84	5.40	0.12	8.23	8.11	7.26	7.26	2511
0.00	1.44	0.73	0.47	2.64	0.67	12.73	12.06	2.27	2.27	2456
1.82	0.20	0.36	1.73	4.11	0.09	3.35	3.26	0.47	5.57	2924
0.20	4.36	0.76	1.10	6.42	0.45	6.91	6.46	5.55	5.55	2661
2.01	0.08	0.44	2.70	5.23	0.25	3.69	3.44	0.54	6.49	2877
0.00	2.44	0.58	0.72	3.74	0.56	9.05	8.49	7.66	7.66	2526
0.18	2.56	0.52	0.74	4.00	0.22	8.73	8.51	4.28	4.28	2458
0.00	1.96	0.57	0.56	3.09	0.66	11.68	11.02	6.80	6.80	2525
2.56	0.08	0.24	3.35	6.23	0.19	3.72	3.53	0.56	7.29	2855
2.65	0.16	0.32	0.97	4.10	0.06	4.08	4.02	1.05	14.83	2856
0.00	3.94	0.29	0.45	4.68	0.22	7.87	7.65	4.91	4.91	2812
0.74	6.00	0.70	0.53	7.97	0.42	15.86	15.44	13.91	13.91	2760
1.10	7.56	0.20	1.88	10.74	0.27	3.44	3.17	2.23	3.78	2486
0.77	3.32	0.14	0.27	4.50	0.45	8.98	8.53	8.58	8.58	2558
0.63	3.08	0.28	0.32	4.31	0.40	11.09	10.69	4.08	6.45	2832
0.74	2.68	0.66	0.33	4.41	0.59	13.08	12.49	0.31	4.39	2559

TABLE 12. ANALYSES OF MIXED FERTILIZER

Station No.	Manufacturer and brand	Place of sampling
2831	Eastern States 5-5-15 Tobacco	Warehouse Point.....
2554	Eastern States 6-8-6	Clinton.....
2695	Eastern States 6-15-9	New Milford.....
2556	Eastern States 8-16-16	Clinton.....
2688	Eastern States 8-16-16 (Low Chlorine Special)	Ellington.....
2752	Eastern States 8-24-8	West Simsbury.....
2845	Eastern States 10-5-10 Tobacco	Warehouse Point.....
	Essex Fertilizer Co., Boston, Mass.	
2495	Essex 3-10-4 Fish Brand Fertilizer For All Crops	Wallingford.....
2497	Essex 4-8-10 Peerless Potato Manure	Wallingford.....
2496	Essex 5-8-7 Complete Manure	Wallingford.....
	L. T. Frisbie Co., New Haven, Conn.	
2704	Frisbie's Corn and Grain 2-10-2	Woodbury.....
2439	Frisbie's Market Garden 4-8-7	New Haven.....
2463	Frisbie's Special 5-8-7	Cheshire.....
2527	Frisbie's Special Potato Fertilizer 4-8-4	Cheshire.....
2736	Frisbie's Special Vegetable and Potato Grower 3-10-4	Factory.....
2851	Frisbie's Tobacco Grower 5-3-5	Granby.....
2482	Frisbie's Top Dresser 7-6-6	Noroton.....
	Paul M. Hubbard & Co. Bristol, Conn.	
2509	Hubbard's Special Lawn Food 10-6-4	Factory.....
	Lowell Fertilizer Co., Boston, Mass.	
2520	Lowell 2-10-2 Bone Brand	Southington.....
2518	Lowell 3-10-4 Animal Brand, A High Grade Manure for All Crops	Southington.....
2732	Lowell 4-8-4 Corn and Vegetable	Shelton.....
2669	Lowell 4-8-7 Old General Crop Manure for Potatoes and Market Garden Crops	Shelton.....
2733	Lowell 4-8-10 Potato Grower	Shelton.....
2519	Lowell 5-8-7 Market Garden Manure	Southington.....
	Millane Nurseries & Tree Experts Co., Cromwell, Conn.	
2534	Millane Shade Tree Food 8-8-4	Factory.....

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Nitrogen					Phosphoric acid			Potash		Station No.
In nitrates	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
3.45	0.24	0.92	1.58	6.19	0.21	6.41	6.20	1.50	16.27	2831
1.83	3.94	0.02	0.37	6.16	0.23	9.55	9.32	0.77	6.67	2554
1.14	4.60	0.24	0.36	6.34	0.39	16.37	15.98	6.59	9.57	2695
1.77	6.06	0.20	0.31	8.34	0.32	16.77	16.45	12.80	16.78	2556
1.30	6.00	0.32	0.38	8.00	0.12	15.86	15.74	1.12	16.62	2688
2.17	5.56	0.22	0.43	8.38	0.45	25.88	25.43	0.94	8.29	2752
3.46	0.40	4.14	2.80	10.80	0.10	5.66	5.56	0.66	10.85	2845
0.00	2.06	0.81	0.29	3.16	0.40	10.80	10.40	3.80	3.80	2495
0.27	2.82	0.62	0.37	4.08	0.40	8.79	8.39	10.08	10.08	2497
0.41	3.58	0.48	0.59	5.06	0.25	8.76	8.51	7.00	7.00	2496
0.00	1.22	0.64	0.38	2.24	0.90	11.06	10.16	2.13	2.13	2704
0.34	2.68	0.60	0.61	4.23	0.41	9.04	8.63	7.18	7.18	2439
0.56	3.78	0.50	0.39	5.23	0.53	8.58	8.05	7.09	7.09	2463
0.47	2.76	0.64	0.39	4.26	0.39	8.91	8.52	4.05	4.05	2527
0.00	2.06	0.86	0.38	3.30	0.88	10.75	9.87	4.32	4.32	2736
0.53	0.12	0.66	4.02	5.33	0.35	4.72	4.37	1.09	5.31	2851
1.50	4.40	0.54	0.64	7.08	0.31	6.67	6.36	5.96	5.96	2482
0.00	5.76	0.51	4.14	10.41	0.24	7.67	7.43	5.07	5.07	2509
0.00	1.16	0.75	0.35	2.26	0.51	10.93	10.42	1.83	1.83	2520
0.00	2.05	0.94	0.29	3.28	0.32	10.85	10.53	4.09	4.09	2518
0.00	2.82	0.95	0.39	4.16	0.42	8.90	8.48	4.19	4.19	2732
0.32	2.68	0.70	0.53	4.23	0.38	8.80	8.42	7.14	7.14	2669
0.41	2.92	0.60	0.57	4.50	0.26	9.35	9.09	9.77	9.77	2733
0.36	3.58	0.42	0.60	4.96	0.32	8.78	8.46	6.82	6.82	2519
2.71	4.28	0.56	0.45	8.00	0.63	8.65	8.02	4.12	4.12	2534

TABLE 12. ANALYSES OF MIXED FERTILIZER

Station No.	Manufacturer and brand	Place of sampling
	Miller Fertilizer Co., Baltimore, Md.	
2521	Miller's Crop Grower 5-8-7	Plantsville.....
2523	Miller's Onion and Vegetable 4-8-4	Plantsville.....
	New England Fertilizer Co., Boston, Mass.	
2505	New England 2-10-2 Corn Phosphate	New Britain.....
2691	New England 3-10-4 Super, A High Grade Fertilizer for All Crops	Unionville.....
2499	New England 4-8-4 Potato and Vegetable Manure	Meriden.....
2506	New England 4-8-7 Old General Crop Manure for Potato and Market Garden Crops	New Britain.....
2703	New England 4-8-10 Complete Manure	Wallingford.....
2498	New England 5-8-7 Market Garden Manure ..	Meriden.....
2693	New England 5-8-10 Aroostook Special for Potatoes	Unionville.....
2920	New England 6-3-6 Tobacco	Buckland.....
2829	New England 7-3-7 High Analysis Tobacco ..	Silver Lane.....
	Old Deerfield Fertilizer Co., South Deerfield, Mass.	
2826	Old Deerfield 4-6-10 Tobacco Starter	Somers.....
2766	Old Deerfield 5-3-5 Tobacco	Somers.....
2765	Valley Brand 4-8-4	Somers.....
2872	Valley Brand 4-8-7	Somers.....
	Olds & Whipple, Inc., Hartford, Conn.	
2546	Luxura 5-8-6	Factory.....
2577	O & W 4-8-4 Market Garden Fertilizer	Willimantic.....
2822	O & W 5-3-5 Complete Tobacco Fertilizer ..	Suffield.....
2921	O & W 5-4-15 High Grade Tobacco Starter and Potash Compound	So. Windsor.....
2576	O & W 5-8-7 High Grade Potato and Vegetable Fertilizer	Willimantic.....
2835	O & W 6-3-6 Blue Label Tobacco Fertilizer .	Warehouse Point.....
2542	O & W 8-6-6 Top Dressing and Grass Fertilizer	Factory.....
2684	O & W 3-10-4 Corn Special Fertilizer	Bloomfield.....
2683	O & W 4-8-7 Potato and General Purpose Fertilizer	Bloomfield.....
2738	Wilcox 3-10-4 Corn Special Fertilizer	Mystic.....
2739	Wilcox 4-8-4 Market Garden Fertilizer	Mystic.....
2737	Wilcox 4-8-7 Potato and General Purpose Fertilizer	Mystic.....
2751	Wilcox 8-6-6 Top Dresser Fertilizer	Factory.....

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Nitrogen					Phosphoric acid			Potash		Station No.
In nitrates,	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
0.00	4.20	0.17	0.36	4.73	0.10	8.77	8.67	6.68	6.68	2521
0.00	3.28	0.35	0.37	4.00	0.10	8.61	8.51	3.80	3.80	2523
0.42	1.28	0.19	0.41	2.30	0.73	10.65	9.32	2.07	2.07	2505
0.00	2.28	0.48	0.36	3.12	0.85	10.85	10.00	4.26	4.26	2691
0.40	2.72	0.58	0.37	4.07	0.45	8.75	8.30	4.03	4.03	2499
0.43	2.60	0.46	0.57	4.06	0.46	9.13	8.67	6.85	6.85	2506
0.68	2.64	0.42	0.49	4.23	0.33	9.19	8.86	9.96	9.96	2703
0.41	3.88	0.46	0.39	5.14	0.55	9.06	8.51	6.98	6.98	2498
0.55	3.96	0.48	0.35	5.34	0.37	9.76	9.39	9.34	9.34	2693
1.28	0.08	0.64	3.89	5.89	0.16	4.41	4.25	1.70	6.63	2920
2.44	0.12	0.76	3.66	6.98	0.24	4.55	4.31	0.66	7.02	2829
1.02	0.12	0.32	2.75	4.21	1.48	10.13	8.65	0.84	10.38	2826
0.73	0.00	0.88	3.82	5.43	0.59	5.32	4.73	0.78	5.47	2766
0.00	3.28	0.78	0.17	4.23	0.40	9.25	8.85	4.33	4.33	2765
0.00	3.36	0.68	0.29	4.33	0.59	9.21	8.62	7.26	7.26	2872
0.73	2.26	0.38	1.95	5.32	1.37	11.47	10.10	6.23	6.51	2546
1.00	2.00	0.38	0.82	4.20	0.54	8.62	8.08	4.45	4.45	2577
0.83	0.12	0.42	4.03	5.40	0.21	3.62	3.41	0.47	5.06	2822
2.15	0.12	0.64	2.29	5.20	0.34	5.04	4.70	1.09	15.39	2921
0.83	2.20	0.36	1.75	5.14	0.13	8.58	8.45	7.58	7.58	2576
0.75	0.00	0.76	4.65	6.16	0.25	3.68	3.43	0.51	6.40	2835
4.28	1.84	0.00	2.07	8.19	0.12	6.34	6.22	6.30	6.30	2542
0.00	2.00	0.70	0.84	3.54	0.86	12.12	11.26	4.20	4.20	2684
0.68	2.12	0.64	0.82	4.26	0.20	8.54	8.34	7.44	7.44	2683
0.54	1.90	0.14	0.81	3.39	0.30	10.38	10.08	4.51	4.51	2738
0.95	2.04	0.36	0.79	4.14	0.42	8.66	8.24	4.20	4.20	2739
0.79	2.10	0.40	0.96	4.25	0.20	8.39	8.19	7.09	7.09	2737
4.47	1.68	0.00	2.04	8.19	0.10	6.26	6.16	6.22	6.22	2751

TABLE 12. ANALYSES OF MIXED FERTILIZER

Station No.	Manufacturer and brand	Place of sampling
	Piedmont-Mt. Airy Guano Co., Baltimore, Md.	
2427	Piedmont Harvest Brand 4-8-4	Groton.....
2426	Piedmont Harvest Brand 5-8-7	Groton.....
2428	Piedmont Harvest Brand 7-6-6	Groton.....
	Plantspur Products Co., Ridgefield, N. J.	
2450	Plantspur Fertilizer 3-3-2	Stratford.....
	Frank S. Platt Co., New Haven, Conn.	
2444	Platco Special 4-8-7	Factory.....
2429	Platt's Special Lawn Fertilizer 10-5-5	Factory.....
	The Rogers & Hubbard Co., Portland, Conn.	
2588	Golf Course Fertilizer 8-6-2	Hartford.....
2438	Gro-Fast Fertilizer 5-6-6	New Haven.....
2678	Hubbard's All Soils, All Crops Fertilizer 4-8-4	Higganum.....
2816	Hubbard's Climax Tobacco Brand 5-3-5	New Milford.....
2575	Hubbard's Corn and Grain Fertilizer 2-12-4	Willimantic.....
2677	Hubbard's High Potash Fertilizer 2-8-10	New Britain.....
2550	Hubbard's Potato Fertilizer 5-8-7	Branford.....
2589	Hubbard's Rose Food 7-10-5	Hartford.....
2852	Hubbard's Tobacco Grower Vegetable Formula 6-3-6	Granby.....
2875	Hubbard's Tobacco Grower Vegetable Formula 6-3-6	Rockville.....
2530	Hubbard's "Bone Base" Fertilizer for Seeding Down	Willimantic.....
2582	Hubbard's "Bone Base" Oats and Top Dressing	Stafford Springs.....
3244	Hubbard's "Bone Base" Oats and Top Dressing	Factory.....
2581	Hubbard's "Bone Base" Soluble Corn Manure	Stafford Springs.....
2679	Hubbard's "Bone Base" Soluble Potato Manure	Higganum.....
2849	Hubbard's "Bone Base" Soluble Tobacco Manure	Suffield.....
2536	Red H Brand 4-8-4	Wethersfield.....
2680	Red H Brand 4-8-7	Factory.....
2529	Red H Brand 5-8-7 Fertilizer	Milldale.....
2570	Red H Brand 7-6-6	Norwich.....
2767	Red H Brand 8-16-14	Cromwell.....

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

In nitrates	Nitrogen				Phosphoric acid			Potash		Station No.
	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
0.00	3.52	0.26	0.40	4.18	0.15	8.40	8.25	4.37	4.37	2427
0.00	4.06	0.38	0.38	4.82	0.10	8.27	8.17	7.18	7.18	2426
0.12	5.76	0.42	0.42	6.72	0.12	6.37	6.25	6.13	6.13	2428
0.00	3.00	0.00	0.53	3.53	0.30	3.85	3.55	2.09	2.09	2450
0.35	2.50	0.62	0.60	4.07	0.43	8.96	8.53	6.93	6.93	2444
0.00	6.92	1.03	2.58	10.53	0.33	7.29	6.96	5.34	5.34	2429
0.32	1.52	2.08	4.22	8.14	0.51	7.63	7.12	2.37	2.37	2588
0.00	1.42	0.26	3.67	5.35	0.31	7.00	6.69	0.94	6.48	2438
0.00	2.92	0.81	0.34	4.07	0.57	8.94	8.37	4.15	4.15	2678
1.38	0.14	0.86	2.50	4.88	0.25	3.87	3.62	0.93	5.15	2816
0.00	0.96	0.92	0.29	2.17	0.93	12.80	11.87	3.86	3.86	2575
0.00	1.24	0.68	0.29	2.21	0.67	8.76	8.09	10.48	10.48	2677
0.00	3.38	0.87	0.57	4.82	0.95	9.28	8.33	6.92	6.92	2550
0.00	0.48	2.38	4.36	7.22	1.70	13.24	11.54	0.81	5.49	2589
1.16	0.08	0.92	3.86	6.02	0.34	4.12	3.78	0.98	6.71	2852
1.02	0.08	1.36	4.04	6.50	0.31	3.91	3.60	0.78	6.26	2875
0.00	1.44	0.27	1.31	3.02	1.81	12.30	10.49	6.58	6.58	2530
7.73	0.08	0.08	0.57	8.46	0.95	8.31	7.36	6.18	7.63	2582
6.98	0.32	0.00	0.58	7.90	1.73	9.06	7.33	4.80	7.80	3244
0.60	1.92	1.06	0.39	3.97	0.40	10.34	9.94	7.27	7.27	2581
0.93	2.20	0.90	0.91	4.94	1.13	9.81	8.68	1.29	7.42	2679
1.77	0.63	1.67	0.89	4.96	1.17	9.87	8.70	1.04	10.40	2849
0.00	3.64	0.48	0.14	4.26	0.31	8.60	8.29	4.97	4.97	2536
0.00	3.46	0.50	0.18	4.14	0.20	8.56	8.36	7.09	7.09	2680
0.18	4.60	0.06	0.22	5.06	0.45	8.63	8.18	7.15	7.15	2529
0.21	6.32	0.60	0.19	7.32	0.40	6.49	6.09	6.17	6.17	2570
0.00	7.48	0.41	0.19	8.08	0.26	17.60	17.34	14.19	14.19	2767

TABLE 12. ANALYSES OF MIXED FERTILIZER

Station No.	Manufacturer and brand	Place of sampling
	O. M. Scott & Sons, Marysville, Ohio	
2671	Scott's Turf Builder 10-6-4	Yalesville.....
	M. L. Shoemaker & Co., Philadelphia, Pa.	
2769	"Swift-Sure" Tobacco and General Use 3-10-3	Granby.....
	Springfield Rendering Co., Springfield, Mass.	
2580	Springfield 3-10-4 Corn and Grain Fertilizer ..	Stafford Springs.....
2516	Springfield 4-8-4 General Garden Fertilizer ...	Thompsonville.....
2846	Springfield 4-8-7 Potato and Vegetable Fertilizer	Windsor.....
2579	Springfield 4-8-10 Complete Manure	Mansfield Depot.....
2834	Springfield 5-5-5 Lawn and Shrub Fertilizer ..	Thompsonville.....
2578	Springfield 5-8-7 Market Garden Fertilizer ...	Mansfield Depot.....
2827	Springfield 5-8-7 Market Garden Fertilizer ...	Ellington.....
2833	Springfield 6-3-6 Tobacco Special Fertilizer ...	Thompsonville.....
	Standard Wholesale Phosphate & Acid Works, Inc., Baltimore, Md.	
2674	Standard United States 2-10-2	New Britain.....
2697	Standard United States 3-8-3	Danbury.....
2927	Standard United States 3-12-6	Hazardville.....
2453	Standard United States 4-8-4	Westport.....
2879	Standard United States Guano 4-8-7	So. Glastonbury.....
2675	Standard United States 4-8-10	New Britain.....
2954	Standard United States 5-4-5	Ellington.....
2452	Standard United States 5-8-7	Westport.....
2451	Standard United States 5-10-5	Westport.....
2560	Standard United States 7-6-5	New London.....
2968	Standard United States 7-6-5	New London.....
2454	Standard United States 9-8-8	Westport.....
2893	Standard United States 9-8-8	Ellington.....
	Summers Fertilizer Co., Baltimore, Md.	
2762	Summers's "Best On Earth" 3-8-4 Fertilizer ..	West Hartford.....
2657	Summers's "Best On Earth" 4-8-4 Fertilizer ..	New Britain.....
2564	Summers's "Best On Earth" 5-8-7 Fertilizer ..	New London.....
2566	Summers's "Best On Earth" 8-8-8 Fertilizer ..	New London.....

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Nitrogen					Phosphoric acid			Potash		Station No.
In nitrates	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
0.00	6.22	0.45	3.45	10.12	0.24	6.38	6.14	3.28	3.88	2671
0.00	2.28	0.14	0.43	2.85	0.42	10.74	10.32	0.74	3.45	2769
0.00	2.12	0.69	0.34	3.15	0.72	10.72	10.00	4.08	4.08	2580
0.33	2.66	0.72	0.27	3.98	0.30	7.81	7.51	4.17	4.17	2516
0.33	2.74	0.56	0.35	3.98	0.41	8.84	8.43	7.09	7.09	2846
0.26	2.64	0.74	0.29	3.93	0.31	8.28	7.97	9.94	9.94	2579
0.17	1.94	0.54	2.47	5.12	0.73	7.82	7.09	0.80	6.10	2834
0.33	3.76	0.72	0.33	5.14	0.36	8.65	8.29	7.00	7.00	2578
0.38	3.80	0.48	0.30	4.96	0.36	8.75	8.39	6.93	6.93	2827
1.37	0.06	0.74	3.91	6.08	0.18	4.45	4.27	1.59	6.38	2833
0.00	1.36	0.21	0.23	1.80	0.69	12.21	11.52	3.18	3.18	2674
0.00	2.32	0.23	0.47	3.02	0.65	9.09	8.44	1.97	3.15	2697
0.00	2.60	0.16	0.38	3.14	0.39	11.84	11.45	3.30	5.61	2927
0.24	2.84	0.28	0.56	3.92	0.30	8.31	8.01	2.66	3.91	2453
0.12	3.00	0.32	0.52	3.96	0.65	8.93	8.28	5.28	6.63	2879
0.00	3.24	0.24	0.50	3.98	0.50	9.04	8.54	8.67	9.30	2675
0.00	3.64	0.31	1.09	5.04	0.35	4.96	4.61	1.12	4.92	2954
0.00	3.78	0.60	0.46	4.84	0.45	9.31	8.86	5.08	7.06	2452
0.00	4.10	0.20	0.64	4.94	0.91	11.10	10.19	2.54	4.80	2451
0.37	3.96	0.44	0.32	5.09	0.35	7.81	7.46	2.67	5.08	2560
0.00	4.24	0.28	0.62	5.14	0.37	7.50	7.13	2.96	5.16	2968
1.61	6.64	0.45	0.34	9.04	0.35	7.27	6.92	7.56	7.56	2454
0.00	7.36	0.68	0.35	8.39	0.36	8.42	8.06	8.67	8.67	2893
0.83	2.20	0.02	0.15	3.20	2.15	10.00	7.85	4.26	4.26	2762
1.02	2.40	0.18	0.14	3.74	1.85	9.65	7.80	4.01	4.01	2657
1.83	3.24	0.00	0.16	5.23	2.12	9.84	7.72	6.71	6.71	2564
3.13	4.50	0.00	0.15	7.78	2.22	9.78	7.56	8.68	8.68	2566

TABLE 12. ANALYSES OF MIXED FERTILIZER

Station No.	Manufacturer and brand	Place of sampling
	Swift & Company, Baltimore, Md.	
2510	Swift's Special Gold Fertilizer 12-6-4	Bristol.....
3318	Swift's Special Golf Fertilizer 12-6-4	Waterford.....
2440	Vigoro 4-12-4	New Haven.....
	Synthetic Nitrogen Products Corp., New York City	
2747	Nitrophoska 15-30-15	Woodstock.....
	Tennessee Corp., Lockland, Ohio	
2818	Loma 5-10-4	New Haven.....
2953	Soil-Prep 4-2-2	Hartford.....
	I. P. Thomas & Sons Co., Philadelphia, Pa.	
2668	I. P. Thomas 5-8-7 Fertilizer	Milford.....
2854	Long Island Special 4-8-7	North Haven.....
2734	Tip Top Fertilizer 3-10-6	North Haven.....
	Virginia-Carolina Chemical Co., Richmond, Va.	
2746	Bloomaid 5-10-4	Putnam.....
2533	V-C Aroostook Potato Grower 5-8-7	Middletown.....
2745	V-C Fairway Fertilizer 8-6-5	Putnam.....
2682	V-C National Brand 4-8-10	Middletown.....
2539	V-C Owl Brand Fertilizer 2-12-4	Thomaston.....
2540	V-C Tip Top Top Dresser 7-6-6	Thomaston.....
2532	V-C XXXX Fish and Potash 4-8-5	Middletown.....
	F. H. Woodruff & Sons, Milford, Conn.	
2448	Woodco 10-6-4 Lawn Food	Factory.....
	S. D. Woodruff & Sons, Orange, Conn.	
2445	Woodruff's Home Mixed Fertilizer 4-8-7	Factory.....
	Worcester Rendering Co., Auburn, Mass.	
2567	Prosperity All Crops Fertilizer 4-8-4	Groton.....
2743	Prosperity Corn and Grain Fertilizer 2-10-2	Plainfield.....
2561	Prosperity Market Garden 5-8-7	New London.....
2744	Prosperity Special Potato Fertilizer 4-8-10	Danielson.....
2562	Prosperity Superior Top Dressing 7-6-6	New London.....
2946	Prosperity Superior Top Dressing 7-6-6	Groton.....

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Nitrogen					Phosphoric acid			Potash		Station No.
In nitrates	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
0.35	9.72	0.06	0.13	10.26	0.08	7.90	7.82	4.06	4.06	2510
....	11.01	0.11	6.91	6.80	4.19	4.19	3318
0.41	3.48	0.00	0.33	4.22	0.29	12.40	12.11	4.23	4.23	2440
1.63	12.48	14.53	0.05	30.08	30.03	14.34	14.34	2747
0.25	4.38	0.04	0.46	5.13	0.31	11.36	11.05	4.32	4.32	2818
0.00	1.44	0.96	1.78	4.18	0.11	2.28	2.17	2.75	2.75	2953
0.16	4.88	0.04	0.35	5.43	0.25	8.54	8.29	7.09	7.09	2668
0.00	3.36	0.47	0.35	4.18	0.90	9.13	8.23	6.89	6.89	2854
0.00	2.52	0.32	0.39	3.23	0.62	10.70	10.08	6.00	6.00	2734
0.00	3.68	0.69	0.40	4.77	0.46	11.78	11.32	4.19	4.19	2746
0.00	4.46	0.49	0.17	5.12	0.04	8.54	8.50	7.31	7.31	2533
0.00	5.70	1.71	0.57	7.98	0.08	6.40	6.32	4.29	5.20	2745
0.00	3.40	0.41	0.16	3.97	0.23	8.71	8.48	9.68	9.68	2682
0.00	1.64	0.13	0.23	2.00	0.77	12.47	11.70	3.78	3.78	2539
0.00	6.18	0.52	0.14	6.84	0.14	6.35	6.21	6.23	6.23	2540
0.00	3.30	0.66	0.24	4.20	0.11	8.20	8.09	5.58	5.58	2532
0.31	3.28	2.94	3.47	10.00	0.59	7.55	6.96	4.00	4.00	2448
0.30	3.08	0.16	0.84	4.38	0.07	8.28	8.21	6.52	6.52	2445
0.39	2.62	0.58	0.36	3.95	0.46	8.61	8.15	4.42	4.42	2567
0.00	1.24	0.58	0.34	2.16	0.20	10.35	10.15	2.48	2.48	2743
0.46	3.64	0.44	0.38	4.92	0.34	8.16	7.82	7.66	7.66	2561
0.52	2.78	0.46	0.37	4.13	0.40	8.68	8.28	10.16	10.16	2744
0.48	4.60	0.40	0.80	6.28	0.33	6.90	6.57	6.72	6.72	2562
0.40	2.60	3.44	0.40	6.84	0.21	6.35	6.14	5.83	5.83	2946

TABLE 12a. SUMMARY OF CHEMICAL DEFICIENCIES

Manufacturer	Number samples	Number guaranties	Deficiencies			Percentage of guaranties met
			Nitrogen	Available P ₂ O ₅	Potash	
American Agricultural Chemical Co.	26	78	4	0	3	91
American Cyanamid Co.	2	4 ¹	0	0	0	100
Apothecaries Hall Co.	12	35 ²	0	2	0	94
Armour Fertilizer Works	5	15	2	0	1	80
Associated Seed Growers, Inc.	4	12	0	0	0	100
Bartlett, F. A. Tree Expert Co. ...	1	3	0	0	0	100
Berkshire Chemical Co.	11	33	1	1	0	94
Consolidated Rendering Co.	1	3	0	1	0	67
Davey Tree Expert Co.	1	3	0	0	0	100
Eastern States Farmers' Exchange	11	32 ²	0	1	0	97
Essex Fertilizer Co.	3	9	0	0	0	100
Frisbie, L. T., Co.	7	21	0	0	0	100
Hubbard, Paul M., & Co.	1	3	0	0	0	100
Lowell Fertilizer Co.	6	18	0	0	1	94
Millane Nurseries & Tree Experts Co.	1	3	0	0	0	100
Miller Fertilizer Co.	2	6	1	0	1	67
New England Fertilizer Co.	9	27	1	1	1	89
Old Deerfield Fertilizer Co.	4	12	0	0	0	100
Olds & Whipple, Inc.	13	39	0	0	0	100
Piedmont-Mt. Airy Guano Co.	3	9	2	0	0	78
Plantspur Products Co.	1	3	0	0	0	100
Platt, Frank S., Co.	2	6	0	0	0	100
Rogers & Hubbard Co., The	21	63	1	0	1	97
Scott, O. M., and Sons Co.	1	3	0	0	0	100
Shoemaker, M. L., and Co.	2	5 ²	1	0	0	80
Springfield Rendering Co.	8	24	0	1	0	96
Standard Wholesale Phosphate and Acid Works, Inc.	13	39	5	2	4	72
Summers Fertilizer Co.	4	12	3	2	1	50
Swift & Co.	3	9	2	0	0	78
Synthetic Nitrogen Products Corp.	1	3	1	0	1	33
Tennessee Corp.	2	6	0	0	0	100
Thomas, I. P., and Sons Co.	3	9	0	0	0	100
Virginia-Carolina Chemical Co. ..	7	21	2	1	2	76
Woodruff, F. H., and Sons	1	3	0	0	0	100
Woodruff, S. D., and Sons	1	3	0	0	1	67
Worcester Rendering Co.	6	18	2	0	0	89
	199	592	28	12	17	90

¹Two samples with two guaranties.²One sample with only two guaranties.

TABLE 12b. COMMERCIAL DEFICIENCIES FOR THE PERIOD 1921-1933

Manufacturer	Total number samples	Number equalling or exceeding guaranties in money value	Percentage for 13-year period	Number samples for 1933	Percentage for 1933
American Agricultural Chemical Co.	513	495	96	26	100
American Cyanamid Co.	13	13	100 ¹	2	100
Apothecaries Hall Co.	145	144	99	12	100
Armour Fertilizer Works	132	113	86	5	100
Associated Seed Growers, Inc.	18	18	100 ²	4	100
Bartlett, F. A. Tree Expert Co. ...	11	10	91 ³	1	100
Berkshire Chemical Co.	124	124	100	11	100
Bridge's, A. D., Sons Co.	23	23	100 ⁴	0
Eastern States Farmers' Exchange	144	124	100	10	100
Essex Fertilizer Co.	77	74	96	3	100
Frisbie, L. T., Co.	123	113	91	7	100
International Agricultural Corp. ...	69	63	91 ⁴	0
Lowell Fertilizer Co.	121	110	91	6	100
Mapes Formula and Peruvian Guano Co.	129	128	99 ⁵	0
Miller Fertilizer Co.	17	14	82 ⁶	2	100
New England Fertilizer Co.	94	90	96	9	100
Old Deerfield Fertilizer Co.	28	28	100 ⁷	4	100
Olds & Whipple, Inc.	108	108	100	13	100
Parmenter and Polsey	34	33	91 ⁸	0
Piedmont-Mt. Airy Guano Co.	37	28	76 ⁹	3	100
Platt, Frank S., Co.	18	17	94	2	100
Rogers & Hubbard Co., The	216	211	98	21	100
Royster, F. S., Guano Co.	67	54	81 ¹⁰	0
Shoemaker, M. L., and Co.	34	34	100	2	100
Springfield Rendering Co.	56	54	96	8	100
Standard Wholesale Phosphate and Acid Works, Inc.	69	60	87	13	77
Synthetic Nitrogen Products Corp.	11	10	91 ¹¹	1	0
Thomas, I. P., and Sons Co.	63	63	100	3	100
Virginia-Carolina Chemical Co. ..	86	82	95	7	100
Woodruff, S. D., and Sons	11	9	82 ¹²	1	100
Worcester Rendering Co.	59	55	93	6	100
	2650	2502	94	182	97

¹Includes 1925, 1926, 1928, 1930, 1931, 1932, and 1933 only.²Includes 1930, 1931, 1932, and 1933 only.³No samples for 1921, 1922, and 1923.⁴No samples for 1932 and 1933.⁵No samples for 1931, 1932, and 1933.⁶Includes 1921, 1930, 1931, 1932 and 1933 only.⁷Includes 1927, 1929, 1930, 1931, 1932, and 1933 only.⁸No samples for 1933.⁹No samples for 1922, 1923, 1924, 1930, 1931, and 1933.¹⁰No samples for 1930, 1931, 1932, and 1933.¹¹Includes 1928, 1929, 1930, 1931, 1932, and 1933 only.¹²No samples for 1928 and 1929.

INSOLUBLE ORGANIC NITROGEN

The quality of the organic nitrogen in mixed fertilizers is judged by the so-called "activity" of the portion which is insoluble in water, as measured by the alkaline and the neutral permanganate methods. Values of less than 50 per cent and 80 per cent respectively are regarded as indicating organic nitrogen of inferior quality. Values less than these have been found in nine samples this season, but in four of these the water-soluble nitrogen plus the active insoluble, or the water-insoluble alone, have substantially met or exceeded the guaranties and hence no question of inferior quality is raised. The samples in which such is not the case are as follows.

2453	Standard	United States	4-8-4
2452	"	"	" 5-8-7
2968	"	"	" 7-6-5
2454	"	"	" 9-8-8
2893	"	"	" 9-8-8

SPECIAL AND HOME MIXTURES

Analyses of thirty-five special and home mixtures are given in Table 13. Four of these were sampled by the Station Agent.

TABLE 13. ANALYSES OF SPECIAL AND HOME MIXTURES

Station No.	Name of mixture	Place of sampling	Total nitrogen	Phosphoric acid			Potash			Station No.
				Citrate-insoluble	Total	"Available"	As murate	Total	Chlorine	
			%	%	%	%	%	%	%	
2424	Sampled by Station									
	Home Mixture for Corn 3-10-5	T. W. Ryan, Stratford	2.84	0.32	11.56	11.24	5.32	5.32	...	2424
2425	Home Mixture for Vegetables 5-7-5	T. W. Ryan, Stratford	5.23	0.44	8.64	8.20	5.57	5.57	...	2425
2880	Tobacco Fertilizer—No. 1	John Leonard, East Hartford ..	4.30	0.25	2.36	2.11	1.14	17.16	0.86	2880
2881	Tobacco Fertilizer—No. 2	John Leonard, East Hartford ..	5.80	0.50	4.50	4.00	0.57	8.26	0.43	2881
	Sampled by Purchaser									
2320	Formula A—1st sample	American Sumatra Tobacco Corp., Bloomfield	5.35	0.41	4.85	4.44	...	5.22	0.41	2320
2330	Formula A—2nd sample	American Sumatra Tobacco Corp., Bloomfield	5.45	0.39	4.57	4.18	...	5.45	0.41	2330
2385	Formula A—3rd sample	American Sumatra Tobacco Corp., Bloomfield	5.26	0.40	4.07	3.67	...	5.11	0.49	2385
2844	Formula B	American Sumatra Tobacco Corp., Bloomfield	9.92	0.28	3.19	2.91	...	1.14	0.27	2844
2353	Shedd's Special Mixture Fertilizer	Walter T. Clark, County Agent, Norwich	8.16	0.27	14.59	14.32	...	9.76	0.90	2353
1861	1933 Formula—Sample No. 2 ..	Consolidated Cigar Corp., Hartford	5.94	0.41	4.47	4.06	...	6.08	0.28	1861
1862	1933 Formula—Sample No. 5 ..	Consolidated Cigar Corp., Hartford	5.39	0.40	3.83	3.43	...	7.36	0.39	1862

TABLE 13. ANALYSES OF SPECIAL AND HOME MIXTURES—Continued

Station No.	Name of mixture	Place of sampling	Total nitrogen	Phosphoric acid			Potash			Station No.
				Citrate-insoluble	Total	"Available" "Soluble"	As muriate	Total	Chlorine	
			%	%	%	%	%	%	%	
2295	1933 Formula—Sample No. 17 .	Consolidated Cigar Corp., Hartford	5.98	0.47	4.78	4.31	...	6.26	0.41	2295
2296	1933 Formula—Sample No. 25 .	Consolidated Cigar Corp., Hartford	5.74	0.44	1.58	1.14	...	6.32	0.33	2296
2372	Our Own 1933 Formula— Sample No. 1	Consolidated Cigar Corp., Hartford	5.44	0.36	4.18	7.82	...	7.34	0.51	2372
2373	Our Own 1933 Formula— Sample No. 2	Consolidated Cigar Corp., Hartford	5.70	0.30	4.33	4.03	...	6.20	0.41	2373
2374	Our Own 1933 Formula— Sample No. 4	Consolidated Cigar Corp., Hartford	5.98	0.39	4.61	4.22	...	6.36	0.44	2374
2375	Our Own 1933 Formula— Sample No. 6	Consolidated Cigar Corp., Hartford	6.12	0.37	4.06	3.69	...	6.72	0.48	2375
2376	Our Own 1933 Formula— Sample No. 11	Consolidated Cigar Corp., Hartford	6.00	0.45	4.75	4.30	...	6.09	0.33	2376
2718	1933 Formula Fertilizer— Lot No. 30	Consolidated Cigar Corp., Hartford	6.08	0.41	4.29	3.88	...	6.58	0.42	2718
2719	1933 Formula Fertilizer— Lot No. 31	Consolidated Cigar Corp., Hartford	5.58	0.50	3.98	3.48	...	7.24	0.47	2719
2720	1933 Formula Fertilizer— Lot No. 32	Consolidated Cigar Corp., Hartford	5.90	0.50	4.70	4.20	...	6.11	0.38	2720
2721	1933 Formula Fertilizer— Lot No. 33	Consolidated Cigar Corp., Hartford	6.00	0.41	4.85	4.44	...	6.20	0.38	2721
2722	1933 Formula Fertilizer— Lot No. 34	Consolidated Cigar Corp., Hartford	5.92	0.37	4.53	4.16	...	5.91	0.48	2722

2723	1933 Formula Fertilizer— Lot No. 35	Consolidated Cigar Corp., Hartford	% 5.94	% 0.39	% 4.55	% 4.16	% ...	% 6.29	% 0.44	2723
2724	1933 Formula Fertilizer— Lot No. 36	Consolidated Cigar Corp., Hartford	5.48	0.35	4.27	3.92	...	7.00	0.54	2724
2725	1933 Formula Fertilizer— Lot No. 37	Consolidated Cigar Corp., Hartford	5.95	0.30	4.37	4.07	...	6.09	0.41	2725
2726	1933 Formula Fertilizer— Lot No. 38	Consolidated Cigar Corp., Hartford	6.01	0.35	4.62	4.27	...	6.16	0.32	2726
2727	1933 Formula Fertilizer— Lot No. 39	Consolidated Cigar Corp., Hartford	5.81	0.45	4.50	4.05	...	6.19	0.34	2727
2967	5-3-6 Mixture	Fred Foishen, Broad Brook	5.04	0.15	3.30	3.15	0.51	6.53	0.38	2967
2640	Mixed Formula	The Gershel-Kaffenburgh Tobacco Co., Hartford	5.58	0.24	2.85	2.61	..	5.68	0.55	2640
2963	Special Mixture—Sample No. 1	The Gershel-Kaffenburgh Tobacco Co., Hartford	5.60	0.21	2.88	2.67	0.69	5.36	0.52	2963
2964	Special Mixture—Sample No. 2	The Gershel-Kaffenburgh Tobacco Co., Hartford	5.56	0.21	2.85	2.64	0.62	5.05	0.47	2964
2632	Formula III Fertilizers—Lots 7 and 8	C. K. & H. T. Hale, Gildersleeve Henry E. Wells, Warehouse Point	6.48	0.27	3.79	3.52	...	3.54	0.15	2632
2936	Special Mixture for Tobacco ..		9.10	0.72	7.18	6.46	1.59	17.23	1.20	2936
2778	Home Mixture Fertilizer— No. 47	P. H. Woodford & Co., Avon ..	3.04	0.25	1.86	1.61	1.99	9.49	1.50	2778

VII. MISCELLANEOUS FERTILIZERS AND OTHER MATERIALS

SHEEP MANURE, ETC.

Analyses of seventeen official samples of sheep, cattle and poultry manures are given in Table 14.

LIMING MATERIALS

Analyses of limestone and other liming materials are given in Table 15.

OTHER MISCELLANEOUS MATERIALS

Twenty-seven samples of various materials, including deposits of peat, have been examined for individuals, the samples being submitted by them.

CHECK MEALS AND FERTILIZERS

Twenty-one samples of cottonseed meal and mixed fertilizers have been examined in the collaborative programs of the American Oil Chemists Society and the F. S. Royster Guano Co.

TABLE 14. ANALYSES OF SHEEP MANURE AND OTHER MATERIALS

Station No.	Manufacturer or brand	Place of sampling	Nitrogen		Total phosphoric Acid		Potash		Station No.
			Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	
2455	Pulverized Sheep and Goat Manure. American Agricultural Chemical Co., West Haven	Libner Grain Co., Norwalk	2.14	1.23	1.26	1.00	2.15	2.00	2455
2487	Sheep Manure. Apothecaries Hall Co., Waterbury	J. B. McArdle, Greenwich	2.13	2.00	2.10	1.00	3.45	2.00	2487
2821	Sheep & Goat Manure. Armour Fertilizer Works, New York City ..	C. A. Cowles, Plantsville	1.40	1.25	1.35	1.00	3.33	2.00	2821
2435	Two-In-One Peat Poultry Manure. C. E. Buell, Inc., Boston, Mass. ..	Lighthorn & Pond Co., New Haven ..	3.12	2.75	2.96	2.50	1.25	1.25	2435
2483	Corenco Sheep Manure. Consolidated Rendering Co., Boston, Mass.	Davis Grain Co., Noroton	1.39	1.23	0.99	0.50	2.44	2.00	2483
2701	Davey Shredded Cattle Manure. Davey Tree Expert Co., Kent, Ohio ..	R. E. Landis, Old Greenwich	2.06	1.00	2.01	1.20	2.05	2.00	2701
2813	Lane's Sheep Manure. Chas. M. Lane, West Hartford	Wm. J. Rice, Stamford	1.11	1.00	1.25	1.00	2.98	2.00	2813
2586	Sheep's Head Pulverized Sheep Manure. Natural Guano Co., Aurora, Ill.	Cadwell & Jones, Hartford	2.05	2.00	1.50	...	1.76	2.00	2586
2430	Groz-it Brand Pulverized Sheep Manure. Pacific Manure & Fertilizer Co., San Francisco, Cal.	Frank S. Platt Co., New Haven ...	1.33	1.50	0.80	0.75	2.33	2.50	2430

TABLE 14. ANALYSES OF SHEEP MANURE AND OTHER MATERIALS—Continued

Station No.	Manufacturer or brand	Place of sampling	Nitrogen		Total Phosphoric Acid		Potash		Station No.
			Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	
2436	Premier Brand Pulverized Poultry Manure. Premier Poultry Manure Co., Chicago, Ill.	Lighborn & Pond Co., New Haven	5.43	4.93	2.41	...	1.11	1.30	2436
2437	Premier Brand Pulverized Sheep Manure. Premier Poultry Manure Co., Chicago, Ill.	Lighborn & Pond Co., New Haven	3.11	1.65	3.25	1.00	1.75	2.00	2437
2673	Wizard Brand Cattle Manure. The Pulverized Manure Co., Chicago, Ill.	S. P. Strople, New Britain	2.06	2.00	1.29	...	0.85	1.00	2673
2672	Wizard Brand Pulverized Sheep Manure. The Pulverized Manure Co., Chicago, Ill.	S. P. Strople, New Britain	2.08	2.00	1.74	...	3.55	2.00	2672
2537	Sheep & Goat Manure. The Rogers & Hubbard Co., Portland	Chas. C. Hart Seed Co., Wethersfield	1.48	1.35	1.05	0.75	3.76	3.75	2537
2568	Sheep Manure. Standard Wholesale Phosphate & Acid Works, Inc., Baltimore, Md.	Eldredge Hardware Co., Norwich..	3.83	2.00	3.27	...	2.15	2.00	2568
2670	Summers' Venezuelan Goat Manure. Summers Fertilizer Co., Baltimore, Md.	Seymour Grain & Coal Co., Seymour	1.00	1.00	0.88	1.00	2.78	3.00	2670
2457	Driconure. Walker Gordon Farms, Juliustown, N. J.	Libner Grain Co., Norwalk	2.19	1.00	1.12	1.00	1.31	1.00	2457

¹Guaranteed 1 per cent available phosphoric acid.²Guaranteed 2.5 per cent available phosphoric acid.

TABLE 15. ANALYSES OF LIMESTONE

Station No.	Manufacturer or brand	Sampled from stock of or sent by
	Allyndale Lime Kilns and Quarries, East Canaan, Conn.	
716	Allyndale Agricultural Limestone ...	Louis E. Allyn, East Canaan
2898	Allyndale Agricultural Limestone ...	C. F. Cass, Wallingford
	American Limestone Co., Bellefonte, Pa.	
2991	Bull Mine—Hydrated ¹	J. B. Lewis, Southington
	Coe's Lime Works, Northford, Conn.	
1751	Lime	Factory
3307	Ground Limestone	Factory
	Connecticut Agstone Co., Danbury, Conn.	
1180	Limestone ²	Factory
1181	Phoenix Agricultural Limestone ...	Factory
3289	Phoenix Agricultural Limestone ...	Meriden Grain & Coal Co., Meriden
3401	Phoenix Ground Limestone	Factory
	Granger's Lime Co., West Stockbridge, Mass.	
3288	Granger's Limestone	Laden Bros. Co., Inc., Wallingford
	Green Mt. Lime Co., New Haven Junction, Vt.	
3295	Producto Agricultural Hydrated Lime	Stafford Farmers' Co-op. Assoc., Stafford Springs
	Lee Lime Corp., Lee, Mass.	
1966	Lime—Batch No. 1	American Sumatra Tobacco Corp., Bloomfield
1967	Lime—Batch No. 2	American Sumatra Tobacco Corp., Bloomfield
1765	Hydrated Lime	Cullman Bros., Inc., Granby
1828	Hydrated Lime	Cullman Bros., Inc., Simsbury ...
2468	Lime—Lot No. 5	S. & Benj. L. Grabosky, Hartford
3292	Agricultural Pulverized Limestone ..	P. Levson & Son, Middletown ...
3298	Agricultural Pulverized Limestone ..	Thomaston Supply Co., Thomaston
3290	Agricultural Hydrated Lime	J. A. Smith & Son, Highwood ...

¹Passes 325 mesh. 95 per cent (wet method); weight of 500 c.c., 206.5 gms.²Insoluble in acid 13.5 per cent.

AND SIMILAR MATERIALS

Chemical analysis				Total oxides	Mechanical analysis					Station No.
Lime (CaO)		Magnesia (MgO)			20 mesh	40 mesh	50 mesh	80 mesh	100 mesh	
Found	Guaranteed	Found	Guaranteed							
%	%	%	%	%	%	%	%	%	%	
31.24	29.00	21.72	19.00	52.96	99.8	99.5	94.0	85.0	80.0	716
31.78	29.00	20.78	19.00	52.56	99.8	81.6	65.2	47.4	38.9	2898
72.77	63.00	0.86	1.00	73.63	2991
50.37	0.80	51.17	97.5	93.5	86.5	85.5	76.5	1751
55.81	0.72	56.53	89.6	72.2	62.4	52.1	49.7	3307
40.76	4.98	45.74	99.4	94.2	86.7	70.5	60.7	1180
....	99.5	92.1	82.1	64.7	61.6	1181
41.31	5.36	46.67	97.1	84.4	80.9	71.4	65.4	3289
42.14	4.63	46.77	97.0	89.6	82.3	72.0	66.0	3401
38.80	9.34	48.14	98.9	89.2	77.3	62.3	56.0	3288
67.67	60.00	9.05	1.00	76.72	3295
30.31	30.00	20.71	20.00	51.02	100.0	99.7	97.3	88.7	83.2	1966
30.40	30.00	20.96	20.00	51.36	100.0	99.5	97.2	88.7	82.4	1967
47.57	33.33	80.90	1765
47.45	47.00	31.82	31.00	79.27	1828
47.88	33.87	31.00	81.75	2468
31.14	30.00	21.25	20.00	52.39	100.0	99.5	97.5	91.1	84.4	3292
30.73	30.00	20.53	20.00	51.26	100.0	99.6	97.2	88.9	87.1	3298
47.57	32.62	80.19	3290

TABLE 15. ANALYSES OF LIMESTONE

Station No.	Manufacturer or brand	Sampled from stock of or sent by
	Miller Lime Products Corp., West Stockbridge, Mass.	
3286	Monarque Agricultural Hydrated Lime	E. O. Chapman, North Haven ...
3293	Monarque Agricultural Limestone ..	Comstock Ferre Co., Wethersfield
	New England Lime Co., Pittsfield, Mass.	
3291	Nelco Agricultural Hydrated Lime ..	H. A. Andrew, Milldale
	Redding Marble Co., Redding, Conn.	
2897	Limestone No. 1	J. S. Owens, Storrs
	Rockland & Rockport Lime Co., Rockland, Maine	
3297	R. R. Land Lime	Associated Seed Growers, Milford
	D. W. Smith & Bro., Ashley Falls, Mass.	
1394	Ashley White Dolomite Limestone ..	Benj. Webster, Litchfield
3287	Ashley White Dolomite Agricultural Limestone	Laden Bros. Co., Inc., Wallingford
	United States Gypsum Co., Falls Village, Conn.	
3294	Agricultural Limestone	A. L. Lockwood, Clinton
3296	Eastern States Magnesium Limestone	E. D. Woolam, Warehouse Point
3299	Eastern States Magnesium Limestone	Wm. Childs, Woodstock
2993	Lime—A ³	Warner-Miller Co., New Haven ..
2992	Lime—B ⁴	Warner-Miller Co., New Haven ..
	Manufacturer Unknown	
3276	Limestone No. 1170—Car N.H. 162035	American Agricultural Chemical Co., West Haven
1835	Fine Ground Limestone	American Agricultural Chemical Co., West Haven
1782	Magnesium Lime	P. J. Anderson, Windsor
371	Limestone, Sample A	Dr. W. E. Britton, Conn. Agr. Expt. Station, New Haven
372	Limestone, Sample B	Dr. W. E. Britton, Conn. Agr. Expt. Station, New Haven
1814	Ground Limestone	J. B. Cannon, Granby
1687	Lime—Car N.H. 167338	Consolidated Cigar Corp., Hartford

³Passes 325 mesh, 99.6 per cent (wet method); weight of 500 c.c., 242.5 gms.⁴Passes 325 mesh 100 per cent (wet method); weight of 500 c.c., 248.5 gms.

AND SIMILAR MATERIALS

Chemical analysis				Total oxides	Mechanical analysis					Station No.
Lime (CaO)		Magnesia (MgO)			20 mesh	40 mesh	50 mesh	80 mesh	100 mesh	
Found	Guaranteed	Found	Guaranteed							
%	%	%	%	%	%	%	%	%	%	
56.02	60.00	16.47	4.00	72.49	3286
38.13	35.00	12.27	6.00	50.40	96.8	86.4	79.8	73.2	72.2	3293
41.81	40.00	27.84	15.00	69.65	3291
30.36	20.21	50.57	100.0	99.6	93.6	61.0	46.7	2897
61.58	60.00	1.48	0.50	63.06	94.6	86.0	77.0	65.7	62.2	3297
30.76	30.00	22.01	19.00	52.77	99.5	84.5	64.5	42.0	34.5	1394
31.02	30.00	21.98	19.00	53.00	100.0	84.0	62.8	44.1	37.3	3287
30.69	29.50	21.07	20.50	51.76	100.0	99.8	84.6	53.6	43.3	3294
29.90	29.50	20.06	20.50	49.96	100.0	99.9	86.9	54.7	45.0	3296
30.27	29.50	19.81	20.50	50.08	100.0	99.8	86.1	51.4	44.2	3299
72.92	1.01	73.93	2993
72.41	0.93	73.34	2992
32.91	16.84	49.75	3276
30.39	20.78	51.17	100.0	99.4	97.0	89.4	84.0	1835
47.31	46.00	33.60	31.00	80.91	1782
52.47	0.58	53.05	371
30.81	21.58	52.39	372
32.35	21.96	54.31	100.0	76.0	55.0	35.2	28.2	1814
47.74	32.73	80.47	1687

TABLE 15. ANALYSES OF LIMESTONE

Station No.	Manufacturer or brand	Sampled from stock of or sent by
1688	Lime—Car N.H. 171706	Consolidated Cigar Corp., Hartford
1689	Lime—Car N.H. 170591	Consolidated Cigar Corp., Hartford
2594	Land Plaster ⁵ —Truck No. 1	Hatheway & Steane, Inc., Hartford
2326	Lime—Car 162215	Hatheway & Steane, Inc., Hartford
363	Ground Limestone	Joseph Kempter, East Haven
1011	Limestone	H. Lewis, Westerly, R. I.
1670	Clove Valley Limestone	James R. Place, Canaan
2405	Land Plaster ⁶	A. N. Shepard & Son, Inc., Hartford
2409	Hydrated Lime—Car 162215	A. N. Shepard & Son, Inc., Hartford

⁵SO₃, 45.24 per cent.⁶SO₃, 44.30 per cent.

AND SIMILAR MATERIALS

Chemical analysis				Total oxides	Mechanical analysis					Station No.
Lime (CaO)		Magnesia (MgO)			20 mesh	40 mesh	50 mesh	80 mesh	100 mesh	
Found	Guaranteed	Found	Guaranteed							
47.94	32.51	80.45	1688
48.97	30.31	79.28	1689
34.20	2594
42.47	29.09	71.56	2326
29.82	18.98	48.80	96.0	91.0	87.0	72.0	61.0	363
31.26	20.13	51.39	1011
31.92	18.18	50.10	99.5	93.5	86.0	75.0	69.5	1670
33.69	2405
42.14	28.98	71.12	2409

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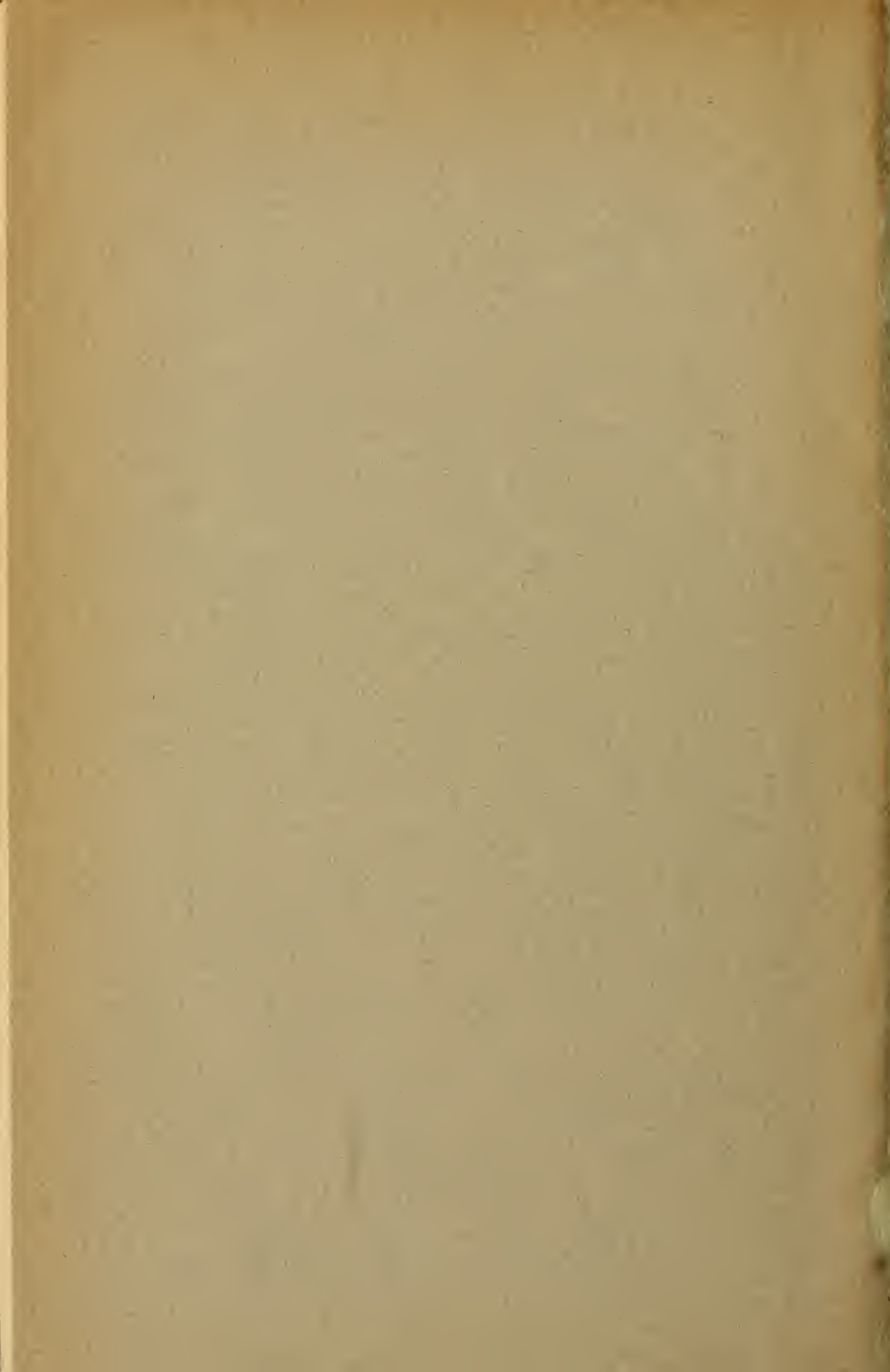
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